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# The use of density in Australian planning

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#### Introduction

The concept of urban density is basic to Western urban planning. jurisdictions regulate in some way the density of population, dwellings or land-use activities within urban space. Yet the influence of density on urban functioning is also one of the most contested dimensions of contemporary urban planning. Davison (2006) has demonstrated that there has been a bifurcation in Australian conceptions of urban sustainability between those who believe that sustainability will only be achieved through the application of a high density regime to remake existing suburbs and those for whom a revitalisation of the existing urban realm offers the most secure path to sustainable urbanisation. These debates largely fix on the presumed impacts of density on social and environmental conditions. They do not, however, tend to acknowledge the social influences that condition the debate about density. These include the different values, political outlooks and priorities that participants bring to the discussion of density. The social play of debate around density is underlined by a historical record that reveals the tendency of policy consensus to shift between strongly contradictory polarities. For instance, in the wake of Victorian slum reform high density was seen as inimical to health and morals. In some contemporary policy contexts, the consensus has shifted to assert that the low density suburban form is dangerous to health and to social integrity. As one contemporary US text asserts, Sprawl Kills (Hirschhorn 2005).

This is to assert that the questioning and discussion of density must be socially informed, not simply scientifically or technically framed. We argue that this insight, which is something of a social scientific 'truism' for any technical policy debate, is yet to be applied to the issue of density. We suspect that Abram's (2005) observation that technical debates are often 'politics by other means' is applicable to the technical contestation of urban density.

The current Australian policy consensus tends to favour densification as a means to environmental and social improvement, although deep scholarly and political criticisms of this view abound. The contemporary array of metropolitan plans reflects the policy consensus around the 'compact city' ideal but also accommodates criticisms and practical difficulties associated with this object by allowing for a quantum of further low density expansion. The plans clearly view the manipulation of densities as a means by which particular social, economic and environmental outcomes may be achieved through planning. Yet there remains a significant degree of disjuncture in the density trajectories of many of the sub-regions of Australian cites and the density consensus contained in plans that seek to manage and corral them, often in ignorance of the complexity of the social processes through which these urban spaces are constituted (Forster 2006).

Planners' contemporary uses of density concepts in part reflect contemporary urban concerns. In periods when a quite different array of urban concerns confronted urban planners a set of quite different qualitative characteristics were ascribed to different urban densities. This initial observation that the planning meanings ascribed to density as a spatial concept vary over time suggests that there is an important, perhaps even primary, sociological dimension to the concept of density. This assessment in turn implies that urban density can be perceived not only from a physical or technical perspective, but also from a critical sociological perspective. Surprisingly there has been little recent scholarship that has considered density as a sociological concept. By comparison the planning literature is replete with technical and empirical perspectives that attribute various social, economic and environmental effects to particular densities of urban form, many of which have been prominent in urban social science.

This short, exploratory paper reviews the concept of urban density from a historical and sociological perspective to identify how this idea has been deployed in Western urban planning thought and practice and the social conditions in which particular perceptions of density emerged and what their social and policy effects were. We hope that this research will strengthen planning debate in Australia and elsewhere, in part by questioning whether density is as much an artefact as a determinant of other urban social processes such as struggles over the form and structure of cities.

We hope that by providing a critical, socially informed perspective on urban density that we begin to signpost a path out of the currently intractable division in Australian planning debates between those who consider an increase in urban densities to be essential to the achievement of urban sustainability and those for whom densification marks a departure from this ideal. As Davison has warned, planning risks becoming 'stuck in a cul-de-sac' if is unable to reconcile or reformulate the struggle over density and move towards a more constructive and broadened form of engagement with urban challenges. However, we do not seek to resolve this intellectual and policy conundrum by arguing in favour of a particular density regime. Rather we wish to demonstrate three things:

- 1. the social and historical conditioning of debate about density, in combination with equivocal scientific evidence about the influence of density on human environments, renders deeply problematical any deterministic approach to urban form;
- 2. in view of the above, that the influence of density cannot be measured or forecast in a manner isolated from context: density is one dimension of a complex ensemble of conditions and activities that shape particular urban contexts in unique ways:
- 3. that the emphasis dedicated to urban density in Australian planning schemes both historically and in the present, neglects or underestimates the environmental and social significance of other urban conditions and activities and thus risks diverting conceptual and practical energies away from potentially more fruitful avenues for the achievement of sustainability.

In this regard we echo Davison's (2006) plea for a shift from unproductive struggles over the technical underpinnings of sustainability and towards a greater emphasis on the 'values', aspirations underpinning planning. This means paying more attention to the social and political objectives of urban policy and the way that social and political aspirations are implicated in scientific discourse. To the extent that this paper advocates a particular direction for Australian urban planning it is toward a more critical and probably reduced emphasis on density as a dimension by which the purpose of urban plans is promulgated and their success measured.

To better understand how the present struggle over urban form is shaped and constituted by particular and complex urban social and economic conditions we deliberately seek a historical perspective on the fascination with density that has characterised urban planning. By providing and historical perspective on density per se, we hope that the use of density as a planning object can be revealed so that we can appreciate changes in this use and thus comprehend how the manipulation of densities is articulated within broader urban socio-spatial complexes. This historical perspective allows us to both trace the persistence of density as a planning object while also showing the differences in the ends to which density is put. We encapsulate these differences in the notion of a 'density regime' which describes the prevailing planning conception of appropriate densities and their effects. The paper divides the history of density in Australian planning into two broad phases and uses the transition between these phases to identify opportunities to reconfigure present planning by reconceptualising the role of density in urban spatial processes.

### The emergence of a density regime

Concepts of density have been central to the emergence and development of modern urban planning as a scholarly and practical discipline. Modern urban planning emerged in part as a response to the social conditions of the 19<sup>th</sup> Century city. Industrialisation had drawn large populations to cities. Rapid urban growth, unequal wealth distribution, high land costs, limited planning and lack of technology produced high population concentrations, often in poor quality housing within Western cities. From the mid-19<sup>th</sup> Century public observers reported on the social and environmental conditions experienced by rapidly growing cities. Two key factors were identified as being particularly problematic – high levels of crowding within dwellings and high dwelling concentrations within urban areas. Many volumes which detailed these phenomena were published in the late-19<sup>th</sup> Century (Hall 2002) and led via a series of inquiries and commissions into these conditions to the establishment of town planning as a new mode of government.

Three features of the town planning movement were particularly reliant on notions of urban density and which served to form a loose 'density regime'. The first feature was an offshoot of the statistical movement in which the enumeration of population levels within given spatial zones social by statistical and social survey became increasingly important as a method of social analysis (Driver 1988). The use of surveys enabled nascent planners to identify the spatial concentrations of population at which particular medical and social

(including percieved moral) pathologies developed. Crowding was a particular fascination for the Victorian middle class reformers who often perceived the medical and moral effects of this phenomenon together.

The second feature of the town planning movement was the growth of public health and safety legislation which set new standards for housing that in part depended on the insights of social statistics but also intersected with medical perceptions of population densities. These new standards codified the internal layout of dwellings and the spatial relationship between dwellings via setbacks to allow light access. Housing design became a major focus of the town planning movement after WWI (Adams 1934; Adams, Thompson, Fry *et al* 1932; Bauer 1934; Hegemann 1936). The third focus of the town planning movement was to achieve the desired spacing between dwellings at a price that the poor and the working class could afford. Almost universally in Europe, North America and Australasia, this involved the suburbanisation of housing. But the form that suburbanisation should take remained a problem for planning to address.

Suburbanisation predated planners' attempts to procure it for the masses. The middle-classes, who could afford greater levels of urban space had been relocating to ex-urban locations since the beginning of the industrial era (Fishman 1989). The 'bourgeois utopia' (Fishman 1989) to which planning aspired was exemplified in the proposals of the garden city movement in which a new spatial order for cities would be created through deliberate planning of development beyond existing urban areas (Howard 1946). The spacious form of the garden city was adopted as the normative order for planning for much of the remainder of the twentieth century.

While the garden city movement influenced the development of suburban planning in Australia, local planners attitudes were also heavily influenced by the dominant socio-cultural preference for individual dwellings dating from the early period of European settlement of Australia (Davison 2000). Hence Australian garden city ideals emphasised the 'privatism' (Kemeny 1981) of detached single-family dwellings and owner-occupied tenure, and were hostile to the experimentation with multiple unit dwellings and alternative tenure systems pursued in Europe (Freestone 1987). Density, per se, did not explicitly figure in the design and marketing of Australian garden suburbs, but was implicitly represented in the key signifying elements of the garden suburb ideal, such as individual dwellings with spacious surrounds and generous setbacks from roadways.

Concerns over the development of slums in Australian cities had stimulated strong interest in town planning by the early-20<sup>th</sup> Century which was expressed through a particular focus on the regulation of allotment sizes. Despite the interest in spacious garden suburbs, municipal regulation of lot sizes varied greatly. In Queensland close-set housing stimulated a minimum standard of 16 perches (405 m²) (Lewis 1999). Victorian legislation specified minimum lot sizes of 150 m², but as Lewis (1999) has demonstrated there was a great deal of variation in actual lot sizes with many departures below this level. In 1929 Melbourne's Metropolitan Planning Commission recommended a minimum lot size of 4,000 square feet (372 m²) but adoption of this standard was left to the discretion of local councils many of which ignored it. There is little scholarly

literature however that explains the reasoning behind these minimum standards. Lewis's account provides focuses primarily on the dimensions pertaining to individual allotments but doesn't attend in detail to the concepts underlying them. Marsden (2000) attributes the introduction of dwelling design standards to fire safety and hygiene concerns mixed with dominant middle class preferences and ideals. As Marsden (2000, p. 30) explains:

Mention of 'ordinary' notions of cleanliness, supposedly disregarded by workmen who could afford better, suggests how much housing regulation was class-based. Enforcing designs providing more numerous rooms and washing amenities... expressed middle-class prejudices against working-class life... The 'moral function' of housing... became predominant concern of would be regulators... [T]he Building Acts have had a predominant influence... in most of urban Australia... By insisting upon minimum block sizes and detached houses, they have enforced by law the Australian 'suburban ideal'. They have helped create the suburban sprawl that is as typical... in Australia.

Davison (2006) has however argued that the sociological basis for the order desired by Australian planners was less emphatically middle-class in origin than it was:

[T]he filling out of respectable British working-class ideals as a filtering down of middle-class ones. While offering a new sense of privacy and proprietorship, they were also characteristic by product of British working class traditions of self-help and cooperation.

What is common to both the Marsden and Davison accounts is the clear, sociological rather than technical, basis for the regulation of urban densities. Throughout this period density at an aggregate scale did not appear to be a direct conceptual concern. While regulation controlled the internal design of houses and their relationship to allotments of minimum size there was little direct concern with density beyond the immediate lot boundary. The relationship between dwellings was organised by the internal arrangement of dwellings on lots via setbacks, rather than at the aggregate scale. This arrangement thus achieved the desired hygiene and safety objectives without compromising the preference for privatism and consequently enforced the Australian norm of the single detached dwelling. The rigidity with which these norms were enforced through municipal planning regulation eventually produced a reaction against the suburban form it generated (Boyd 1960). Conceptually, however, density was not directly articulated as an object of planning at the aggregate scale in the early-20<sup>th</sup> Century. Moreover attempts to regulate the density of urban form at a wider spatial scale did not emerge in Australia until the mid-20<sup>th</sup> Century as the renewed attention to housing shortages and quality deficits produced a fresh interest in slum reclamation, urban regeneration and social equity in housing (Sandercock 1977).

## The post-WWII codification of density

The renewed interest in density was partially codified in government schemes. The 1944 final report into post-war reconstruction published the newly established Commonwealth Housing Commission (1944) is perhaps the most comprehensive and significant of the Australian 20<sup>th</sup> Century planning documents in terms of the study of the social use of urban density because it explicitly addressed spatial dwelling densities, attributed a set of

social, economic and environmental effects to different densities and codified the desired size and arrangement of individual dwelling units, at a much broader spatial scale than previous plans. The Commission (1944) identified desirable allotment sizes and dwelling setbacks, but also specified desirable 'net densities' for neighbourhoods based on 'scientific data' and its own assessment of desirable living environments:

The commission has given consideration to the desirable density of housing in Australian towns. We have had research carried out on all the factors mentioned above, which have a bearing on regulating this density. It is clear, that this scientific investigation into health factors, such as access of sunlight and air, can assist in establishing densities, but the other human factors cannot be measured in scientific terms, as for example the size of garden and yard space for family use and the desirable degree of privacy; these latter are a matter of opinion; In making our decisions we have first of all examined the scientific results and then have modified them where necessary by judgement of human needs.

The Commission specified that in areas of detached dwellings, net densities were to be eight dwellings per acre (20 dwellings per hectare). For attached dwellings the desired density was eleven dwellings per acre and for multi-storey units 40 dwellings per acre (Commonwealth Housing Commission 1944, p. 34). The Commission did not specify what the 'scientific' basis for these alternative dwelling densities was, although it did place a particular emphasis on solar access to ensure the rooms of each dwelling received a minimum level of sunlight during even winter days.

The Commission's preferred allotment sizes were reflected in the Victorian Uniform Building Regulations which applied from 1945. These incorporated five categories of site area ranging from 3,500 square feet (300 m2) to 8,500 square feet (785 m2) (Lewis 1999). Yet, at least in Melbourne, by the 1950s, the desirability of the densities specified by the Commonwealth began to be questioned by planners. As Lewis (1999) recounts, the Melbourne Metropolitan Board of Works had begun to complain at the extent of land required for housing at traditional Australian densities. These concerns about urban density were in turn a response to the post-WWII expansion of Australian cities.

The period after WWII saw an expansion of Australian urban areas on a scale not seen since the 19<sup>th</sup> Century. New governance and financial arrangements set in place as part of the Commonwealth's post-WWII housing program broadened social access to housing finance while increasing household wealth broadened social access to automobiles(Beer 1993; Berry 1984; Greig 1995). The availability of the automobile permitted dispersion of development between and beyond the public transport networks where it had historically developed and in turn lowered housing costs (Frost 2000). Owner occupation intersected with the prevailing, and now formally established, urban density regime. As Berry (1999, p. 110) describes:

Thus, the attractions of suburban residence are inextricably linked with the push for affordable home ownership. Outer suburban land has offered the lowest cost option for entry to this tenure ... Moreover, relatively low land values allowed the construction of low density, detached dwellings.

While overall home ownership in Australia was only 53.4 per cent by 1947, this rate had increased to 71.4 percent by 1966 (Badcock 2000). The post-WWII suburban boom also saw marked population shifts as residents of inner urban areas moved to new housing in the suburbs (Allport 1987; Neutze 1977).

## A new density regime in Australian cities

This suburban boom brought new problems for metropolitan governments who were faced with a mismatch in demand for infrastructure. Developers were able to subdivide outer-urban land without regard to the costs of infrastructure servicing which were met by government agencies (Neutze 1977). The costs of and opposition to freeways were elements of this concern, at least in Melbourne (McLoughlin 1992). Rapidly rising demand in the new fringe suburban zones contrasted with declining demand in established areas and raised questions about economic efficiency of urban development. Fears of a US style 'doughnut city' involving decline of the inner city contrasting with suburban vitality became popular within planning. The shifting demand for infrastructure along with developer anxieties about the profitability of suburban housing generated to increasing scrutiny of the regulatory provisions governing suburban development. Increasing urban growth had also stimulated concerns about the preservation of green space. Initially planners held the view that there was no alternative to suburban growth (McLoughlin 1992). But as the problems persisted, planners increasingly began to experiment with attempts to shape the structure of Australian cities to control these processes, through land-use schemes such as Melbourne's 1954 Metropolitan Planning Scheme (MMBW 1954) which identified 'reserved living areas' for preferred development, which was in turn followed by 'urban corridor' elements in the 1971 Melbourne plan (MMBW 1971).

The minimum sizes stipulated for allotments and the resulting density of suburban form were identified as key elements of the perceived problem. Patterson et al (1976, p. 3) argued that in favour of reductions in minimum allotment standards, on the basis that:

Many elements of urban law have become redundant in times when a majority of households can secure their private requirements through the market place... The modern emphasis on provision of social goods should be less on achieving minimum requirements than on trade-off between various amenities, all of which are guaranteed to be provided. So long as the municipal council, in pushing minimum lot sizes from 700m2 to 900 m2 sees itself in the light of the early reformer who gave the poor their backyards, the system will continue to produce more of the same and more of the wrong thing.

Overlain on the anxieties about land-use regulation were new concerns about the dependence of post-WWII suburban areas on automobiles driven by the emergence of petroleum security as a global problem in the 1970s (Rannard 1980). Again, the problem was viewed in terms of urban density; the allotment size regime under which the post-WWII suburbs were formed was viewed as producing insufficiently high demand for public transport. Higher densities, it was argued would contribute to greater public transport demand and thus improved economic and environmental efficiency in

Australian cities (McNeill 1980; c.f Mees 2000). Lower prices for housing would also arise from increased urban densities, it was claimed (Paterson, Yencken and Gunn 1976).

The result of these various concerns was the emergence of urban consolidation policies in Australia which aim to increase the extent and concentration of development within the inner and middle zones of Australian cities. Urban consolidation has been the subject of considerable debate in Australian urban policy and has been given extensive academic attention (Searle 2004; Troy 1996), which we do not wish to repeat and replicate here. Rather the intent is to explore how density became implicated in the urban consolidation program as the object par excellence determining urban outcomes, and the implications this shift has had for Australian urban planning.

### The problems of density

The emergence of urban consolidation as an objective of Australian metropolitan planning has largely been continuous, if uneven, since the early-1980s. Much of the purpose of urban consolidation policies is based on the desire to increase population densities within existing built up areas of cities through the relaxation of regulations controlling building heights and bulk. Consolidation policies have been pursued unevenly. Thus New South Wales initially pursued consolidation in Sydney through dual-occupancy subdivision of large lots [Searle 2007]. In Victoria consolidation was pursued by relaxation of dwelling height and density restrictions within seven kilometres of the CBD (Lewis 1999). These policies have proven highly controversial and consolidation policies in Australian cities have subsequently been modified to less coarse approaches to consolidation which emphasise linkages between higher density development and public transport systems. Recent metropolitan plans for Melbourne, Sydney, Brisbane and Perth contain a version of this second generation application of consolidation policies. The intent to increase urban density is now a fundamental element of Australian urban planning with most plans at the sub-metropolitan level of targets for increased dwelling numbers to be accommodated through infill and redevelopment.

While the planners imposing these schemes on Australian cities are convinced of their usefulness as planning methods, we wish to raise a note of scepticism about the emphasis on increasing urban densities that figures in these schemes. We don't however seek to advocate in favour of a particular density regime for cities whether high or low. Rather we wish to raise questions about the risks that a monocausal understanding of urban processes may pose for the broader sustainability of the development of Australian cities. We do this through reflection on the history of density regulation as a key element of the early planning toolkit and the lessons this history provides for contemporary planning.

In this sense, contemporary consolidation may be seen almost as reaction to the previous density regime in Australian cities which itself was a response to the social and physical conditions of industrial urbanisation. Many of the perceived problems of Australian urbanisation against which the consolidation movement has railed since the 1970s were the result of regulatory uniformity in the application of a the earlier density regime. Unfortunately there has been little scholarship that illuminates this transitional 1970s

period. Yet the lesson that has been learned from the reactive process is not that of the risks of uniform regulation. Rather the response has been to re-elevate density as a determining urban variable and to re-inscribe this new configuration as the basic premise of Australian urban planning. This conceptual shift itself deserves some querying.

Central to both the early and latter density regimes has been the assumption that the regulation and control of density is a fundamental and determining factor in the production of desirable urban outcomes. Under the first density regime restrictions on the concentration of urban development was seen as the solution to a range of urban social, environmental and economic ills, with the perceived problems of the slums the most prominent among these. Under the second density regime this view has been reversed with urban density now a critical and fundamental factor in the achievement of various urban social, environmental and economic outcomes. Such contemporary objectives include the provision of affordable housing, the facilitation of business exchange in dense environments and the reduction of environmental impacts from transport emissions. Yet the unifying factor across both regimes has been this fundamentalist view of density as a determining urban factor.

Forster (2006) has argued contemporary metropolitan policies risk producing 'parallel urban universes': one occupied by metropolitan planning authorities and their containment-consolidation-centres consensus; the other by the realities of the increasingly complex, dispersed, residentially differentiated suburban metropolitan areas most Australians live in. Davison (2006) worries that these two universes and the alternative idealisations of urban development and change will continue along separate and rigid trajectories with sustainability falling into the void between them. Yet the science on the social, economic and environmental effects of various urban densities that might assist us to traverse this planning divide remains weakly developed and equivocal. As historians have shown, the anxieties about urban densities and the belief that the manipulation of this factor would produce beneficial outcomes were often shot through with cultural and social perceptions, prejudices and biases rather than an objective assessment of the quality of urbanisation under different density conditions. Driver's (1988) work on the 'moral geographies' of early planning regulation demonstrates this quite clearly in the UK experience, while Marsden's (2000) work on early Australian planning regulation also reveals the ideological and cultural desires behind particular density regimes. Beyond the use of density as a salve for urban ills Fishman's (1989) work on suburbanisation and Freestone's (1987) work on garden suburbs have shown that the spatial relationships of dwellings was a key signifier in the construction of bourgeois urbanism.

We ought to be wary of casting aside the insights of historians if we assume that the fundamentalism underpinning the perceptions of the present density regime in Australian cities was not itself the outcome of particular social and cultural desires rather than the result of objective urban processes. We suspect that the emphasis in the present density regime on 'village' concepts, non-motorised travel, and consumption experiences such as the café society provide us with hints that the objectivity presumed to underpin density fundamentalism is itself the product of unrecognised desires and anxieties among the

contemporary urban middle class. Analysis of the role of traditionalism in urban reactions to contemporary modernity may provide a more fruitful avenue of understanding density fundamentalism than the science which purports to underpin contemporary metropolitan schemes. After all the first early density regime was itself founded in the suspicion of urban modernity and exemplified by 'arts and crafts' architecture and a fascination with garden villages and cities.

Insights from geography suggest that the scientific measurement of density is inevitably dependent on the assumption that Euclidian geometry can usefully be deployed to comprehend social phenomena. Given the extraordinary complexity of urban social, economic and environmental processes and relationships it seems that almost utopian levels of optimism are required to sustain the belief that the simple manipulation of urban densities or the application of a particular density regime might offer a universal salve for urban ills. The complexity of comprehending any set of social relationships and the context in which they operate suggests that urban density may not retain the status of a scientific object that many technically oriented analyses suggest. Despite over a century of fascination with density we still lack a comprehensive scientific understanding of how urban density is socially produced. Important social scientific questions about density deserve renewed attention, such as whether density is an artefact of social processes rather than a driver. We remain sceptical that density is as important in the government of urban processes as planning has historically perceived it to be.

### **Conclusions**

In light of our discussion the deliberate production of a given urban density as a planning objective in itself seems a remarkably blunt instrument and one that risks visiting potentially destructive and disruptive forces upon urban communities, especially if wielded by planners who are insensitive to the wider complexity of urban social processes. The rush to densify may in turn produce a new set of problems, just as previous attempts to disperse cities had generated problems. While we can be assured that technical assessments of density and the ascription of particular physical, environmental, social and cultural attributes to particularly densities will remain attractive to planners we must be attuned to the social and political processes in which such technical knowledge is produced.

In this context it is curious to observe the furious institutional activity that has been fomented by the density fundamentalism enshrined in the dwelling targets of recent metropolitan plans. There is an enormous volume of governmental and private sector capacity now deployed to the rather singular aim of achieving the urban densities specified in contemporary urban plans. We wonder if the extent of institutional planning effort that has been recruited is now deployed in Australian cities with the aim of achieving increased densities in turn belies the simplism underpinning what are rather coarse density objectives. If it revolves around such simple spatial relationships, why is the achievement of consolidation so complex?

This paper has only begun to explore some of the questions that attention to the role of density in urban planning has thrown up. But we have demonstrated that there are major problems with the use of density in urban planning that date from the emergence of planning as a discipline over a century ago. Our historical analysis has shown that there are deep flaws in the proposition that density plays a determining role in urban processes. The scientific evidence suggests that density has an ambivalent status than has previously been acknowledged. Sociological and historical analysis, while not final, nonetheless indicates that we need to question whether density is an outcome of urban processes as much as it is a driver. Certainly the science of urban density is insufficiently developed to justify many of the claims that are made in favour of particular density programs. Our analysis has suggests that there are risks in extracting density from its broader urban social, economic and environmental context. There is a task for scholars to revise the sociological conceptualisation of urban density and to develop new methods for comprehending the role of density in urban life. The multiple points at which governments may lever particular social, economic and environmental outcomes from complex urban processes risk being lost or ignored if density is reified and pursued as the ultimate object of planning. The strengthening of Australian urban planning may require a weakening of density's historical hold on the contemporary planning imagination.

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