CENTRE FOR
ARCHITECTURE | THEORY | CRITICISM | HISTORY
ATCH

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Author Bamford, Greg

Title 'A tale of two cities: urban form, housing densities and amenity'

Date 2004

Source Urban Frontiers Program, University of Western Sydney (Eds.) *State of Australian Cities National Conference*

www.uq.edu.au/atch

state of AUSTRALIAN CITIES
national conference >03

Carlton Hotel, Parramatta
3-5 December 2003

A tale of two cities: Urban form, housing densities and amenity

Authored by:

Dr Greg Bamford

Department of Architecture
The University of Queensland
g.bamford@uq.edu.au

INTRODUCTION: A TALE OF TWO CITIES

Australia has a choice: it can continue to follow the American example of suburban sprawl and high energy use, or it can plan for higher-density European-style cities ….
(Newman and Kenworthy 1992: 9)

Proponents of urban consolidation or the compact city often look to European cities to see how we might counter the low density 'sprawl' that has characterized urban development in this country.[1] Concerted efforts have been underway since the late 1980s to make Australian cities denser, with compact city ambitions or ideas underpinning or rationalizing their development. In this paper, I am not concerned to analyse or evaluate these efforts or their outcomes but to inquire instead into our understanding or impression of at least some of our European mentors in this regard and, by implication, the limited alternatives for our urban future that Peter Newman and Jeff Kenworthy (1992) offer above. The paper turns out to be a tale of two cities: one is the European city compact city theorists see, the other is what I see, and they are not the same thing - at least not in respect of the two cities I shall consider, namely, Stockholm and Copenhagen.

I shall begin by comparing Newman and Kenworthy's (1992, 1999) proposal for compacting existing Australian cities, using high density urban villages (the NK model), with the long standing development strategies of the above two Scandinavian cities. The point of this comparison is to highlight an obvious but important difference between the underlying urban form of each type of city, Australian and Scandinavian, which difference shows up one fundamentally deleterious consequence of their down-under makeover proposal. In addition, urban form aside, there are some salutary reminders in the post-war Stockholm experience of high density satellite towns (or large urban villages) and the one time Swedish policy of building mostly flats rather than flats and houses for adherents to such as the NK model. Next, I consider some aspects of urban renewal in inner Copenhagen over the past twenty years or so - the period in which urban consolidation has come to the fore in this country - to illustrate the extent to which recent Danish efforts have gone into improving amenity (and equity) rather than increasing density. I also compare a sample of the denser (or, as it usually turns out, seemingly denser) housing schemes in Copenhagen from this same period with the medium density

housing types common in one Australian city (for convenience, Brisbane) *before* the rise of urban consolidation. The point of this comparison is to cast doubt on the conventional wisdom that, so far as density is concerned, we have not been trying hard enough with our housing types. Of course, what density to aim for in an urban renewal program or how dense new housing generally should be in any city depends on, amongst other things, how dense that city already is, so I conclude with a comparison of the densities of Australian cities with Copenhagen and Stockholm. This comparison produces a surprising result and indicates that, contra Newman and Kenworthy, '*lower* density' and 'European-style' turn out not to be mutually exclusive; more generally, it casts doubt on the overriding causal significance compact city theorists invest in *overall* urban densities.

URBAN FORM AND AMENITY

It would be no small thing to build a compact city from scratch in Australia, or even to infill and expand all of our existing cities along urban consolidation or compact city lines. But it would be quite another to *rebuild* all of our large low density cities as compact versions of their European counterparts. Nonetheless, this is what Peter Newman and Jeff Kenworthy propose. They characterize the current phase of the Australian city as 'Auto City' (Newman 1992: 287; Newman and Kenworthy 1999: 184). Their makeover of Auto City consists in carving a rail transit grid across the entire city, then building scores of "high density" urban villages at (most of) the intersections of this grid. Elsewhere, within 800 metres of any transit stop on the grid, medium density housing would dominate, while the remainder of the city would be left in its current state as more or less low density suburbs (Newman 1992: 297; Newman and Kenworthy 1999: 185). They describe their makeover variously as 'Compact City', '"Future" Nodal/Information City' and 'Postmodern Future "Sustainable" City' (Newman 1992: 296, Newman and Kenworthy 1999: 185, 190). So, how many new urban villages would their proposal entail? I guess the answer is "a lot" - I counted 119 on their most recent diagram (Newman and Kenworthy 1999: 185). How much denser would such a city be? Again, the answer seems to be "a lot" - 'high' and 'medium' are vague predicates especially where density talk is concerned, so we do not know. In the past their examples of praise-worthy urban villages have varied widely in density (Newman and Kenworthy 1992: 31, 45). There

are several matters to consider about their proposal and its implications but I confine myself here to the point about influence or precedence.

Stockholm is a paradigm case of a city whose post-war development was based on an urban village model - albeit typically very large urban villages in the form of 'satellite towns'. Stockholm's 1952 plan proposed a series of satellite towns - with high rise, high density residential cores - served by a new, high capacity subway system (Hall 2002: 337-38). But here the relevant similarity with the NK model ends, for Stockholm, old and new, is an archipelago of islands, with stretches of water and green spaces marbling its urban areas. Over 40% of Stockholm's land area is open or public green space (Statistics Sweden (a)). The new satellite towns or urban villages stretched into the countryside, like beads on a string, with forests, fields, parkland or waterways in between or nearby. This massive new development was not superimposed on a mat of existing suburbia or hedged by hectares of new medium density housing estates, as the NK model envisages (Hall and Ward 1998: 94, Hall 2002: 337).

Writing in the travel section of an Australian newspaper recently, Paul Sheehan (2003: 6) describes a cruise he took on the *Waxholm III* on Stockholm's waterways:

> It began with the breathtaking backdrop of Stockholm's central harbour, which offers the physical beauty of Paris exaggerated by the physical splendour of high cliffs, islands and harbours.
>
> We passed a perfect confection of spires, castles, domes, towers and public buildings with mansard roofs and rows of dormer windows. There were no skyscrapers, no ugly billboards, and most buildings – even the new – rise no more than six storeys, leaving the skyline to spires and pitched roofs.
>
> Abruptly, this gave way to the pristine landscape of the archipelago. There are no straggling outer suburbs, no industrial parkland, no highway ribbon developments … Seamlessly, the Waxholm III was suddenly steaming through a narrow gorge with forests on either side dotted with perfectly kept wooden holiday homes painted in pastel yellows and blues or the traditional deep, rusty red.

> A necklace of tiny white beaches, forests, bays, inlets and headlands, and the occasional frolicking Swedes, had replaced the cityscape. The islands grew more numerous as we sailed into the Baltic.

Even allowing for the rhetorical expectations of popular travel writing, Sheehan does seem to have been smitten, as well he might, by the visual effects of Stockholm's novel spatial planning, indeed more than by any other aspect of the city, and I include these remarks of the wide-eyed tourist because they underline the inferiority of the bargain Newman and Kenworthy would strike with us.[2] Their rebuilt Australian city could provide no comparable experience to Stockholm. There seems to be no recognition in their proposal that existing open space would be crucial to the location of urban villages (although they do show a deformed transit grid), much less that much more open space would be needed with their intensive program of densification.

Post-war Stockholm was built, to reiterate, by urban *expansion*, with extraordinary planning controls, and with the assistance of a government land bank which, in the late 1970s for example, amounted to 675km^2 - or close to the area of Adelaide in 2001 (Hall 2002: 335, ABS 2001). None of these conditions obtain in the NK model. In short, were we to pursue this model we would finish with the worst of both worlds. We would lose many back yards and many public or open green spaces just as and where the demand for such spaces would rise with the substantially increased population. Whatever the undesirable consequences for urban travel distances and energy consumption of the existing, relatively generous distribution of such space in our cities, one cannot gainsay the value of that space to those people whose homes or neighbourhoods it comprises (Bamford 1992, 1995; Troy 1992; Stretton 1994). Swedish compaction without Swedish blue and green space nearby seems to me a very poor ambition to have.[3]

Copenhagen provides no more comfort for their model. The 1948 development plan for the city employed the analogy of a hand. Imagine the back of a hand as the existing city, a hand with fingers spread wide: the fingers would contain Copenhagen's development, accommodating its growing population *and* easing the congestion of the core. Wedges of green space have thus been retained between, and incorporated *along*, these development fingers (Hall and Ward, 1998: 92, Lind

and Lund 2001: 29). Accordingly, Copenhagen's post-war urbanization put people close by existing open space or the countryside, again quite unlike the effects of development in the NK model for Australian cities. Moreover, subsequent refinements to the diagram have remained consistent with these principles. For example, fingers have been extended to reach neighbouring towns – *Køge* 30 kilometres to the south, *Roskilde* to the west - and some development concentrated around each of them; a new and longer finger stretches north along the coast to *Helsingor* (Hall and Ward 1998: 91).

DOMESTIC SPACE AND AMENITY

Stockholm's post-war plan was a response to a severe housing shortage. The Swedish Government set and achieved "extraordinarily high building targets: 650, 000 units for 1956-65, and the so-called Million Programme for 1965-74", building mostly flats, and mostly in the satellite towns (Hall 2002: 335, Statistics Sweden (b)). By the mid 1970s, however, there was a surplus of flats, high vacancy rates in the newer satellite towns and 'problem estates' (Hall 2002: 341-42). Even so, as Peter Hall (2002: 343) notes of *Vällingby*, one of the earlier new towns:

> A visiting American sociologist found … most people seemed content: as compared with American suburbanites in Levittown the men had more time with their children, the women and teenagers found it easier to get around without a car, the children had better-planned open space and special services. Even then, polled, most said they would prefer a house to an apartment: a conclusion that the sociologist, clearly moonstruck by the quality of Stockholm life, felt must reflect a fault in the poll.

Swedish housing policy changed markedly in the 1970s: in 1971, 32% of new dwellings were house and garden; by 1976, the proportion was 70%. Even so, "in Stockholm in 1980 houses and apartments of similar size cost about the same. Apartments were available on demand, but there was a ten-year wait for houses with gardens" (Stretton 1999: 321, Statistics Sweden (b)).

A second instructive change has been a matter of design. Take, for example, two urban villages built in the late 1980s and early 90s, *Skarpnäcksfältet* and *Ekerö*

Centrum. *Skarpnäcksfältet* revived the traditional, medium-rise European housing block pattern - perimeter block with large internal courtyard (Guise 1988); *Ekerö Centrum* has been content to build housing to only three or four storeys, typically as small interconnected car-free courtyards, off a low-rise (one to three storey) pedestrian spine of commercial and cultural facilities. *Ekerö Centrum* would not look out of place in suburban Brisbane (and would do a great deal to improve it) (*Arkitektur* 1989, 1990).

Denmark's flirtation with Modernist housing ideas in the form of high-rise towers and variations on the super-block was relatively brief (Lind and Lund 2001: 65, 267 and 349). Inner Copenhagen retains the traditional housing block pattern mentioned above, built to six storeys or so, but often less, and new apartments retain either this pattern or this height limit (Lind and Lund 2001: 129, 232 and 233). Since the early 1980s an extensive urban renewal program has concentrated on sensitively improving the existing blocks and associated internal courtyard spaces. Much of this work is, in Goffman's (1959) terms, in the back regions - indeed, these renewal efforts would pass largely unnoticed by outsiders - and the focus has been not on increasing density but improving amenity. Apartments have been enlarged with new kitchens and bathrooms; some have 'clip-on' balconies; some roof spaces have been converted or enclosed as glazed common areas. Much effort has gone into improving the jumbled or run-down interior spaces of the blocks, creating integrated landscaped courtyards, visually and functionally increasing the outdoor space and activities available to all residents of a block (Lind and Lund 2001: 127, 226-27 and 284-85; Dunnett and Clayden, 1997: 27-28). Several low-rise (one to three storeys) pre-20th century housing schemes have been retained or restored: *Brumleby* ('The Doctors' Houses'), *Nyboder*, and the Building Society Row Houses ('Potato Row') (Lind and Lund 2001: 70, 147 and 201). Potato Row, for example, consists of 480 small three storey terraces distributed over several narrow parallel streets. The streets have been traffic calmed, largely by 'semantic' rather than physical means, to become lively common outdoor spaces (at least when I have been there, in the warmer months). Little is done physically to slow traffic but many parking spaces have been captured for bicycle racks, trees or flags in pots, picnic tables and, extraordinarily, children's sand boxes; children's games are chalked out in the streets.

The consequence of increasing and improving the *domestic* space available to city residents in these various ways correlates with the end of suburban flight from inner Copenhagen (City of Copenhagen Statistical Office (a)). Such urban renewal is unconcerned with making the city more "urban", as Peter Newman (2003: 8) insists needs to be done; if anything, one could as easily see it as 'suburban' in intent - introducing more of the amenity suburban housing more easily provides.

HOUSING DENSITY AND AMENITY

I turn now to a comparison of higher density housing types in Copenhagen with Brisbane and first consider flats or apartments, then attached houses.

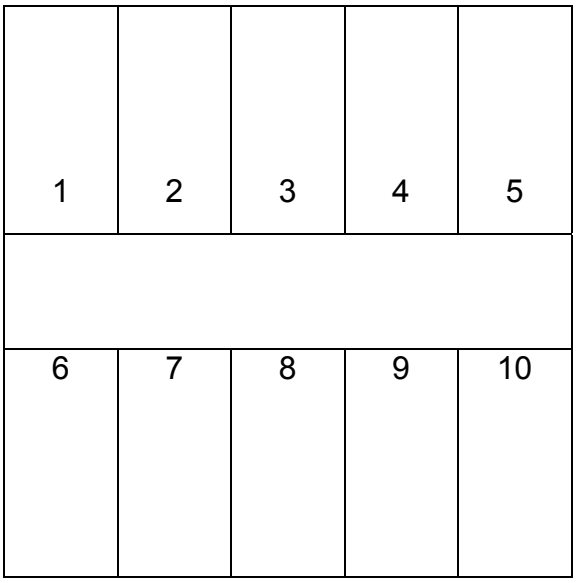

Figure 1: One Hectare of a Suburban Street in Brisbane

To keep matters simple for the sake of this comparison, Figure 1 above illustrates one hectare of a notional suburban street in Brisbane, comprising ten lots, each 40m x 20m, with a 20m wide road reserve. A detached house on each lot would yield ten dwellings per hectare (dph) - see Table 1. As small lot housing, we could halve each lot to 400m^2 - the traditional 19th century sixteen perch lot for a (timber) worker's cottage - which would yield 20dph. Next, consider a traditional Brisbane 'six-pack', that is, a three storey block of two bedroom flats, three flats per upper floor, with garages at ground level. The six pack was the typical medium density solution in Brisbane before the policy of urban consolidation. This solution yields 60dph at a plot

ratio of approximately 1·0 and a required car parking ratio of 150%, that is, nine car spaces per block (Brisbane City Council 199?). More recently, as two storey social housing (Department of Housing, Brisbane Housing Company), each lot can accommodate ten one bedroom flats, yielding 100dph. The plot ratio would be less, however, approximately 0·7, as the flats are smaller and there is no garaging. The car parking ratio in such schemes is typically much less, 50% or less.

Housing Types	Dwellings/hectare (dph)
- Detached houses	10 (11)
- Small lot housing	20 (22)
- 'Six packs' of 2 bedroom flats (3 storeys)	60 (80)
- Social housing as 1 bedroom flats (2 storeys)	100 (110)

Table 1: Densities for Various Housing Types in Figure 1

The figures in brackets in Table 1 above indicate easily achievable density increases for the same or a similar housing type. Suburban lot sizes in fact average only 700m^2 (Troy 1996: 29), thus yielding about 11dph as detached houses. If the road reserve were reduced to 15m, 22 small lot houses would be achievable. If we halved the on-site car parking requirements for six packs to 75%, much of the garaging under the flats could be replaced by a couple of flats, producing an 'eight pack' and yielding a density of 80dph of two bedroom flats. In the social housing option, we could substitute smaller studios (bed-sits) for some one bed flats and easily achieve, say, 110dph, without building to a third storey.

A street of 19th century worker's cottages or 1960s six packs appears to be too modest in the current density stakes, however, to prevent our card from being marked 'could try harder'. Under the recent influence of urban consolidation policies and in line with other Australian cities, Brisbane has licensed substantially higher residential densities, higher plot ratios and increased building heights. So, how are things in Copenhagen?

Housing Scheme & Location	No. of Dwellings	No. of Storeys	Approximate Density (dph)
Dalgas Have, *Frederiksberg*	c.500	5	105
Garvergården, *Østerbro*	71	2·5 - 5·5	93
Sibelius Park, *Rødovre*	191	2 - 3	59
Huset pa Christianshavn, Christianshavn	18	4	58
Engen, *Rødovre*	51	3 - 5	52
Dianas Have, *Hørsholm*	41	2 - 3	41

Table 2: Six Apartment Schemes in Copenhagen, 1986 - 2000

Table 2 above shows a range of apartment schemes from the mid 1980s onwards, in descending order of density.[4] The schemes are a mix of private, co-operative and social housing, varying in size from *Huset*, a small infill scheme in a busy street in *Christianshavn*, to *Sibelius Park* and *Dalgas Have* which are typical consolidation exercises on large brown-field sites. All the schemes are in inner Copenhagen, in relatively dense neighbourhoods or suburbs, with the exception of *Dianas Have* which is on the suburban fringe. All are included in *Copenhagen Architecture Guide* (2001). I have visited all the schemes with the exception of *Dalgas Have* which I included to represent the upper end in density of schemes from this period.

Dalgas Have and *Garvergården* are denser than Brisbane six packs, but not so very much denser. *Dalgas Have* is a mix of one, two and three bedroom flats and would be roughly equivalent to building 'ten packs' on 800m^2 lots in suburban Brisbane. *Garvergården* respects the traditional street block pattern, but is dramatically reduced in height from 5·5 to 2·5 stories approaching the south-western corner of its site to allow sunlight into the internal courtyard, thus sacrificing density for amenity, *unlike* its older five and six storey neighbours. *Garvergården* has a plot ratio of about 1·5,

with about 50% car parking. *Sibelius Park* is a mix of one and two bed flats, with a few 20m^2 studios and small three bed flats for young people, achieving a similar density to six packs. However, the average unit size is smaller and there is no garaging for cars, leaving the plot ratio no more than about two-thirds that of a six pack. Car parking is about 66%. *Huset* is a social housing scheme comprising eighteen two bedroom flats on three levels above a child care centre on the ground. (The tenants use the outdoor space of the centre out of hours.) *Huset* has a similar density and plot ratio to a six pack, but with no on-site car parking. *Engen* is comparable in density to a 'five pack', but with a plot ratio (0·5) and car parking (75%) half that of a six pack. *Dianas Have* is a 'four pack' in density.

Thus, the modest two to three storey walk-up apartments common in Brisbane - the six pack and its variations (Table 1) - achieve comparable densities and plot ratios to much of Copenhagen's higher density housing schemes of recent times (Table 2). Indeed if, as I indicated above, we built eight packs to the same plot ratio as six packs - by halving the required on-site car parking and replacing some garaging with ground floor flats - Brisbane would have been building to a similar density as the median of the range of Copenhagen schemes above.

Housing Scheme & Location	No. of Dwellings	Approx. Density (dph)
Hedelyngen, *Herlev*	142	26
Trudeslund, *Birkerød*	33	22
Fuglsang Park, *Farum*	189	21
Nørgårds Plantage & Hesselbo, *Værløse*	145	17 (13)[5]

Table 3: Four Medium-Density ('dense/low rise') Attached Housing Schemes in Copenhagen, 1978 – 84, by *Vandkunsten* Architects.

I turn now to consider attached housing. Table 3 above shows four attached housing schemes in suburban, mostly outer-suburban, Copenhagen by *Vandkunsten*

Architects. *Vandkunsten* is the most important or influential Danish practices in the design of housing over the past 30 years (*Arkitektur DK* 1994).[6] Again, the above schemes are a mix of private, co-operative and social housing; I have visited all the schemes except *Hedelyngen*, which has been included to ensure the upper end in density is represented. All schemes are described in *Copenhagen Architecture Guide* (2001) or *Arkitektur DK.* This range of schemes is easily comparable in density with small lot (detached or semi-detached) housing in Brisbane. Indeed, the density is so modest it may seem odd that the Danes should describe it, as they characteristically do, as 'dense/low rise' housing (Nygaard 1994). The housing *is* dense, but typically much of the site is retained as common open space – in these cases as generous courtyards, or a small wood, field or creek or, as with *Nørgårds Plantage*, a remnant orchard. So the overall site density is relatively low.

There are, moreover, several factors favouring *higher* residential densities in the Danish schemes than they manage to achieve, so it is instructive that they are not moved to achieve such increases. Firstly, the Danish sites are all larger, often much larger, than 800m^2 and so, in general, set-back requirements do less to constrain development and the public road providing access to the site is thus a smaller proportion of the overall residential development. For Brisbane (Figure 1), 20% of the notional hectare of residential development is road reserve, whereas in all but one of the Danish examples it is considerably less. In *Fuglsang Park*, for example, the corresponding figure is 2%, *Dianas Have* 8%, and *Trudeslund* 12%. *Garvergården* is the exception, with three road frontages the road reserve accounts for 28% of the development area.[7] Secondly, as we have seen, the on-site car parking requirements are much lower in the Danish schemes, and lower car dependency in the society generally allows cars to be either excluded from sites (*Huset*), corralled on the periphery (*Sibelius-Park*), or at most penetrate only short distances to group car parking (*Nørgards Plantage*), thus significantly reducing the proportion of the site given over to the movement of vehicles. Restricting car movement frees up more of the site for other uses, increasing the possibilities for housing configurations with fewer privacy problems from vehicle movement and storage, headlights and noise in the immediate vicinity of dwellings. Thirdly, lifts have been more common in multi-dwelling housing in Denmark, even in social housing schemes (*Sibelius Park*, *Engen* and *Huset*). *Huset* has three lifts, for example, serving only eighteen flats. So why would they not add a storey or two if they were worried about density?

Fourthly, the Danes are generally more comfortable with higher *social* densities, that is, with households in closer proximity to one another. Two of the attached housing schemes in Table 3, for example, *Trudeslund* and *Hesselbo & Nørgards Plantage*, are tightly organized on a small portion of their respective sites, leaving the remainder as open space. Thus, a relatively high social density coincides with a relatively low dwelling density on most sites. Clearly Danish tolerance or a preference for higher social densities removes one of the obstacles to achieving higher densities overall. Equally, however, we can see a strong compensatory demand for *substantial* common external space, which of course lowers achievable densities. Fifthly, the Danes also lower achievable densities in higher density housing by similarly demanding common *internal* space. All of the schemes in Tables 2 and 3 (with the possible exception of *Huset*) have common houses or common rooms of various kinds - amounting to one quarter of the floor area of the individual houses in the case of the cohousing scheme, *Trudeslund* (McCamant and Durrett, 1988: 151). Such common space could easily be redistributed to augment individual dwellings and that portion of the site that would otherwise be allocated to this common space given over to more individual dwellings, thus modestly increasing the overall density.

URBAN DENSITY AND URBAN FORM

I have argued above that typical higher density housing in Brisbane before the rise of urban consolidation in the 1980s - workers' cottages on sixteen perches and six packs - is surprisingly comparable in density to a comparable range of higher density schemes (attached houses, flats) in Copenhagen over the past twenty years or so. But perhaps existing Australian cities are so much less dense than their Scandinavian counterparts that they need to build at much higher densities if they are ever to catch up? Perhaps what the above argument shows, which would nonetheless be significant, is rather the limits to densification in modern, increasingly affluent, Western societies like Denmark? Certainly, many earlier 20th century and, of course, 19th century housing schemes in Copenhagen were built to higher densities. For example, the *Vestersøhus* housing scheme (1935-39) occupies a similar inner city site to *Garvergården* but achieved roughly *double* the plot ratio (Lind and Lund 2001: 118-19). So it is an important question: how dense are these Scandinavian cities?[8]

The municipality of Copenhagen has an area of 88km^2 and in 1950 had a density of 102 persons per hectare (pph). By 1990 this density had fallen to 53pph, but has risen to 56pph in 2003. *Frederiksberg* is a small municipality of 9km^2 within the boundaries of the municipality of Copenhagen with a density now of 104pph. Thus, what effectively constitutes inner Copenhagen has a density of 61pph. Copenhagen county, however, the 528km^2 of fat suburban fingers and green space spreading outwards from this older urban core, is another matter. This stretch of suburban Copenhagen has a density of *less than 12pph*, making the overall density of the city 19·4pph, which is, surprisingly, comparable with that of Sydney in 2001 which registered a density of 20·8pph (City of Copenhagen, Statistics Denmark, ABS 2001).

But where does Copenhagen end? Not at the county boundary. The adjacent municipalities of *Hørsholm, Birkerød* and *Farum*, for example, were counted in the "metropolitan region" of Copenhagen as long ago as 1949 (Nielsen 1949: 66). They are part of Copenhagen's suburban 'fingers' along with, for example, the municipalities of *Stenløse*, *Greve* and *Solrød*. All these municipalities have a density less than that of any mainland Australian capital city (as indeed does every other municipality on the entire island of *Zealand*). *Birkerød* in the affluent northern suburbs, for example, has a density of 6·5pph and is only 28 minutes by train from Copenhagen's Central Station. *Farum* is the most dense of these municipalities at 8·2pph and *Stenløse* the least dense at 2pph - both are 33 minutes by train from Copenhagen. Add these six municipalities and the density of Copenhagen falls to 15·4pph, which is comparable with Melbourne (15·2pph). We could add more municipalities - after *Birkerød*, for example, lies *Allerød* (3·7pph, 33 mins. from Copenhagen) - until we reach the towns, such as *Roskilde* (6·6pph, 26 mins.) and *Køge* (3·2pph, 35 mins.) discussed earlier, or *Hillerød* (2·8pph, 40 mins.). Clearly, the density of this Copenhagen region is lower still, closer to the other Australian capitals: Adelaide (13·8pph), Perth (12·2pph) or Brisbane (9·4pph) (Statistics Denmark: 20-22, *Rejseplanen*, Australian Bureau of Statistics 2001).[9]

Turning to Stockholm, the land area alone of Stockholm county is 6, 519km^2, which is more than three times the area of Melbourne, Australia's largest urban area. Add water, and the county is more than eight times the area of Melbourne. Stockholm county has a population of 1·8million and a density of 1·1pph. Stockholm municipality, on the other hand, has an area of 216km^2 (one eighth of which is water)

and a density of 34·4pph. Stockholm municipality is merely inner Stockholm, however, the densest of the city's 26 municipalities. So, somewhere between the county and the municipality, between densities of 1pph and 34pph, lies the 'real' Stockholm, but where? If we take a sample of inner municipalities, eliminating those that are very low in density - such as *Ekerö* which has an area of 387km^2 and a density well below 1pph - we are left with nine inner municipalities. These municipalities together account for two-thirds of the population of Stockholm county and have an area (more than 90% of which is land) that is approximately that of Adelaide, Australia's smallest mainland state capital in area.[10] This Stockholm has a density of 16·7pph, again comparable with Australian cities (Statistics Sweden (c) and (d), Australian Bureau of Statistics 2001).

The calculations in this section are indicative rather than definitive. More would need to be said on the measurement of urban densities in the different countries and indeed on what we are to count as the area of a city for the purposes of analysis, a point which the significant variations in urban form of these cities, Scandinavian and Australian, suggests (Braby 1989).[11] For all that, it is sufficiently clear that Copenhagen is a relatively low density city, and the same appears to be true of Stockholm. Yet both cities have low petrol consumption (Newman and Kenworthy 1992: 9); Copenhageners are avid cyclists (City of Copenhagen Statistical Office (b)); Stockholm abounds in urban villages; and public transit oriented development associated with higher density housing generally is a feature of both cities.

CONCLUSION: THREE KINDS OF CITY, AT LEAST

So what *are* Australia's urban choices? Our urban future is clearly more open than the Newman and Kenworthy (1992: 9) dichotomy of American suburban sprawl or "higher-density European style cities" allows, and these lower density Scandinavian cities are part of the evidence.

---

[1] Similarly for North America (Beatley 2000). 'Urban consolidation' and 'compact city' are not purely descriptive terms; they are also positive evaluative terms which encourages proponents of the corresponding theory to prefer their use. To consolidate a position is, amongst other things, to *improve* it; a compact arrangement saves space without sacrificing function, otherwise the arrangement would

be cramped or crowded. The negative antonym, 'urban sprawl', is part of this same rhetorical lexicon. We should speak instead of more or less dense cities when that is what or all we mean, reserving judgments of compaction or sprawl for when that is what we intend.

[2] Even if some parts of the city reproduce the dreary urban conditions to be found seemingly everywhere else (Hall 2002: 343-44).

[3] The Swedes did not merely put their new urban villages elsewhere than Newman and Kenworthy would have us do, since the 1970s they have moved away from the other features of the NK model sketched above (of which more below), largely as demands for space and liveability, and automobile ownership, have increased (Hall and Ward 1998: 93-95).

[4] These densities are only approximate but sufficiently accurate for my argument. They are calculated from site plans in *Arkitektur DK* in which scales varied from 1: 1200 to 1: 3500. Two schemes, *Garvergården* and *Huset*, are mixed use, and I have estimated their densities would be, approximately, 93dph and 58dph, respectively, if housing were to replace these other uses. (Their actual housing densities are 89dph and 44dph, respectively.)

[5] The density of *Nørgards Plantage & Hesselbo* is probably as low as 13dph, if the site is as indicated in *Arkitektur DK* (Hesselbo 1985); a portion of the site, however, may be public land (effectively captured for the use of the residents).

[6] *Vandkunsten* were also the architects for three of the six schemes in Table 2: *Garvergården*, *Huset* and *Dianas Have*.

[7] Relatively high densities can be achieved on small lots, for example, as row or terrace housing, though not on 800m^2 lots under six pack set back rules.

[8] According to Newman and Kenworthy (1992: 9), Stockholm is three to four times as dense as Adelaide (14pph) and Copenhagen is about twice as dense.

[9] Train journey times can vary a little.

[10] The municipalities of *Stockholm*, *Danderyd, Huddinge, Järfälla, Lidingö, Nacka, Sollentuna, Solna* and *Sundbyberg* are included in this calculation but not *Botkyrka, Ekerö,* or *Tyresö*.

[11] The density of Letchworth Garden City, for example, is about 42pph, if we exclude its green belt, and about 19pph if we include it (Bamford 1995: 51-53). Ebenezer Howard's 'Social City' consisted of six garden cities, each the size of Letchworth, encircling a larger 'Central City'. Social City would have a similarly low overall density, even though the density of each of the seven cities would be similarly high, as Letchworth (Fishman 1982).

REFERENCES

Architecture and Urban Renewal in Copenhagen. 4 maps. Copenhagen: Gammel Dok, Centre for Architecture and Building Research, 1992.

Australian Bureau of Statistics. Unpublished Census data, 2001.

Bamford, Greg. Density, Equity and the Green Suburb. In Ronnie Harding, ed, *Ecopolitics V: Proceedings of the Ecopolitics V Conference, University of NSW, Sydney, 4-7 April, 1991*, pp. 661-66. Kensington, NSW: University of NSW Centre for Liberal & General Studies, 1992.

Bamford, Greg. Sustainability, Social Organisation and the Australian Suburb. In Janis Birkeland, ed., *Rethinking the Built Environment: Proceedings of Catalyst 95 Conference*, pp. 49-57. Belconnen, ACT: University of Canberra Centre for Environmental Philosophy, Planning and Design, 1995.

Beatley, Timothy. *Green Urbanism: Learning from European Cities.* Washington, DC: Island Press, 2000.

Braby, Robert. Determinants of Urban Density. *Urban Policy and Research* 7 (December 1989): 147-56.

Brisbane City Council. *Issue Paper: Residential B Design Possibilities*. n.p., 199?

City of Copenhagen Statistical Office (a). Population 1900-2003. http://www.sk.kk.dk/tal_fakta_uk/befolkning1a.html, 5 January 2004.
City of Copenhagen Statistical Office (b). Traffic. http://www.sk.kk.dk/tal_fakta_uk/trafik.html, 13 January 2004.

Dalgas Have. *Arkitektur DK* 36 (Nos. 1-2, 1992): 10-15.

Dianas Have. *Arkitektur DK* 38 (No. 4/5 1994): 256-65.

Dunnett, Nigel and Andy Clayden. Courtyards for Living. *Landscape Design* (September 1997): 27-29.

Ekerö Centrum, Etapp III. *Arkitektur* 89 (January/February 1989): 42-47.

Ekerö Centrum. *Arkitektur* 90 (December 1990): 38-51.

Engen. *Arkitektur DK* 36 (Issue 1/2 1992): 30-32.

Fishman, Robert. *Urban Utopias in the Twentieth Century: Ebenezer Howard. Frank Lloyd Wright, and Le Corbusier*. Cambridge, Mass.: MIT Press, 1982.

Fuglsangparken. *Arkitektur DK* 26 (September 1982): 227.
Fuglsangparken. *Arkitektur DK* 29 (October 1985): 198-205.
Garvergården. *Arkitektur DK* 36 (No. 1/2 1992): 16-19.

Goffman, Irving. *The Presentation of Self in Everyday Life*. Penguin: Harmondsworth, 1959.

Guise, Richard. Skarpnäck, Stockholm: City District or Suburban Village. *The Planner* 74 (June 1988): 22-23.

Hall, Peter and Colin Ward. *Sociable Cities: The Legacy of Ebenezer Howard*. Chichester: J. Wiley, 1998.

Hall, Peter. *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century*. 3rd ed. Oxford: Blackwell, 2002.

Hedelyngen, Boligbebyggelese i Herlev. *Arkitektur DK* 26 (September 1982): 231-39.

Hesselbo og Nørgårds Plantage, Boligbebyggelser. *Arkitektur DK* 29 (October 1985): 206-15.

Huset pa Christianshavn. *Arkitektur DK* 45 (February 2001): 33-37.

Lind, Olaf and Annemarie Lund. *Copenhagen Architecture Guide*. Rev. ed. Copenhagen: Arkitektens Forlag, 2001.

McCamant, Kathryn, and Charles Durrett. *Cohousing: A Contemporary Approach to Housing Ourselves*. Habitat Press / Ten Speed Press: Berkeley, California, 1988.

Newman, Peter, and Jeff Kenworthy. *Winning Back the Cities*. Marrickville, NSW: Australian Consumers Association and Pluto Press, 1992.

Newman, Peter, and Jeffrey Kenworthy. *Sustainability and Cities: Overcoming Automobile Dependence*. Washington: Island Press, 1999.

Newman, Peter. Sustainability and Australian Cities. *Australian Planner* 36 (No. 2, 1999): 93-100.

Newman, Peter. The Compact City: An Australian Perspective. *Built Environment* 18 (No. 4, 1992): 285-99.

Newman, Peter. Urban Design and Transport. In Bob Douglas, Bryan Furnass and Jenny Goldie (eds.). *In Search of Sustainability Conference, February – November 2003*, 14pp. http://www.isosconference.org.au/entry.html, 5 January 2004.

Nielsen, Niels (ed.). *Atlas of Denmark. Vol. 2. The Populations.* Copenhagen: The Royal Danish Geographical Society, 1949.

Nygaard, Erik. Vandkunsten. *Arkitektur DK* 38 (No. 4/5 1994): 282-85.

Rejseplanen [Journey Planner]. http://www.rejseplanen.dk, 5 January 2004.

Sheehan, Paul. Harbour Class. *The Sydney Morning Herald*. Travel Section (August 2-3, 2003): 6.

Sibelius-Parken. *Arkitektur DK* 31 (November 1987): 271-78.

Statistics Denmark. Statistical Yearbook 2003. Table 44: Population in Municipalities and Counties 2003, pp. 20-22. http://www.dst.dk/HomeUK/Statistics/Publications/Yearbook/2003.aspx, 6 January 2004.

Statistics Sweden (a). Green Areas in the Ten Largest Urban Areas in Sweden http://www.scb.se/templates/tableOrChart____21124.asp, 5 January 2004.

Statistics Sweden (b). Completed newly constructed dwellings in multi-dwelling buildings and in one- or two-dwelling buildings. 1957-2002. http://www.scb.se/templates/tableOrChart____29284.asp, 5 January 2004.

Statistics Sweden (c). Population by county and municipality on December 31, 2002 and population changes 2002. http://www.scb.se/statistik/be0101/be0101tab3beforandr02eng.asp, 22 October 2003.

Statistics Sweden (d). Kommunarealer den 1 jan 2003. http://www.scb.se/templates/Product____12835.asp, 13 January 2004.

Stretton, Hugh. Transport and the Structure of Australian Cities. *Australian Planner* 31 (No. 3, 1994): 131-136.

Stretton, Hugh. *Economics: A New Introduction*. Sydney: UNSW Press, 1999.

Troy, Patrick. Defending the 1/4 acre lot against the new feudalism. *Town & Country Planning* 61 (September 1992): 240-243.

Troy, Patrick. *The Perils of Urban Consolidation*. Sydney: The Federation Press, 1996.

Trudeslund. *Arkitektur DK* 26 (September 1982): 241-48.

Vandkunsten 1969 – 1994. *Arkitektur DK* (No 4-5, 1994): 192-288 [whole issue].

STATE OF AUSTRALIAN CITIES NATIONAL CONFERENCE

SYDNEY, 2003

SPONSORS

University of Western Sydney

Australian National University

The University of New South Wales

Griffith University

The University of Melbourne

Victorian Department of Sustainability and Environment

NSW Department of Infrastructure, Planning and Natural Resources

ACT Planning and Land Authority

▶ ▶ ▶ **For all enquiries, please contact:-**

University of Western Sydney
Urban Frontiers Program
Building 22, Campbelltown Campus
Locked Bag 1797, Penrith South DC NSW 1797

Phone +61 2 4620 3443
Fax +61 2 4620 3447

Email urbanfrontiers@uws.edu.au
Web www.urbanfrontiers.uws.edu.au