RETROFITTING THE SUBURBS FOR THE ENERGY DESCENT FUTURE

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1. Suburbia as Default Human Habitat

For almost four generations of Australians, the suburbs of our capital cities and regional towns have been the environment in which most of us were raised and in turn raised our children. By the 1950s and 60's the suburbs had become the default or even the natural human environment in English speaking countries, including Australia, New Zealand, Canada, and most influentially the USA. A combination of rapid population growth, cheap energy and abundant land around cities, and government policies and infrastructure, fuelled the growth of suburbia and created a settlement and cultural model that has been progressively exported to the rest of the world.

But beginning in the golden years of the 1950s and 60s, cultural and planning critiques of suburbia began to develop that have informed policies for medium density development, infill development, and city centre high rise, as alternatives to further suburban expansion. The underlying idea that informed these changes is that suburban development is wasteful and inefficient in use of land, water, infrastructure and energy, and that the future will be one of constraint, requiring compact cities more informed by European development patterns.

Over the same period a more radical view of future resource and environmental constraints suggested that our ability to maintain all aspects of globalised industrial modernity would be challenging if not impossible. From this perspective a relocalisation and re-ruralisation of society will be inevitable.

Howard Kunstler, the American commentator on urban form, and more famously peak oil, summed up both these perspectives when he said the "suburbs are the greatest misallocation of resources in the history of the world" and "that they have no future." While these statements have some merit, from a permaculture perspective the suburbs are a great place for incremental retrofitting and behavioural adaptation that can be easily replicated in the energy descent future.

2. Permaculture and Rural Resettlement

For three decades permaculture as a design concept, tool kit of strategies and techniques, and a movement, has been at the forefront of personal and community responses to the sustainability of our settlement patterns. The main expressions of this trend have been successive waves of back to the land settlers on rural land where the ideals of raising a family on a small block of land is more feasible than in the increasingly overbuilt, overpriced and over regulated residential development on our metropolitan fringes.

However, because of the downsides of relocation to marginal bush and rural properties, migration to smaller towns and settlements has gained in popularity. Making use of existing housing, infrastructure and (often) fertile soils of our existing settlements has worked for many, including the writer (Holmgren, 1995). Avoiding the "children chauffeuring business" and recreating some of the lost benefits of the suburbs of the 50's and 60's are other advantages of the small town option.

But the retrofitting of our existing suburban landscapes to make them more agriculturally and economically productive places that can sustain resident households

and communities has always been central to the permaculture agenda. While implementing this agenda has hardly been a roaring success during the decades of affluence and growth, in situ adaption might be the only option available to many during hard times.

3. THE SECOND GREAT DEPRESSION

In a few countries such as Australia where the mining boom and the more long standing property bubble continue to drive overdevelopment, the debate over the relative merits of suburban vs. higher density development continue, but these debates are about to be swamped by the increasingly strident debates brought on by the "second great depression" that has been unfolding since 2008. While these debates over causes and blame will continue, the bursting of the property bubble is likely to stop new development in its tracks.

While energy and infrastructure transitions that lead to greater complexity can take decades if not centuries of economic growth, energy descent transitions to less complexity through crises and collapses can occur more rapidly. However, short of catastrophic collapse, future generations will inherent and continue to inhabit the suburban housing and landscapes created in the fossil fuelled boom of the 20th century. Without cheap oil and resources, freely available credit and a growing economy, rebuilding our cities along other lines will be recognised as a dream from the era of growth. Once the reality of energy descent (in some form) is accepted as highly likely, then a myriad of creative retrofit solutions for this energy transition can be considered. The experiences of rural resettlement and more particularly small town resettlement are directly and indirectly informing the current wave of suburban retrofit pioneers.

Even a degree of uncertainty about sustaining growth suggests a very flexible approach that refocuses our individual and collective priorities to genuine needs rather than wants.

A new set of policies and priorities might include:

- Provision of *basic needs* rather than *resource-expensive wants* will dominate future policy and action.
- Simple and robust systems that are capable of being maintained without expensive and specialised technology.
- An acceptance that reduced mobility and reduced indoor built space per person will characterise future urban life.
- Progressive ruralisation of our settlement patterns and processes in which biological needs and functions of food supply, water and nutrient recycling will be fundamental to the redesign.
- Realisation that very high density buildings and very large cities will not be able to be sustained in the future.
- Relocalisation of our economies and decision-making structures.

At the behavioural level we can expect energy descent adaption will involve:

- Staying at home and slowing down instead of always attempting to move further and faster.
- Doing less with less instead of always trying to do more with less.
- Conserve what we have for the future instead of always trying to sustain growth with new cycles of debt.

Even without breakdown of energy and infrastructure systems, the loss of credit in the money system that leads to the stalling of economic transactions results in rapid changes in human behaviour and social organisation. My 'Future Scenarios' work

(Holmgren, 2009) explores a variety of energy descent scenarios that are influencing permaculture and transition activism at the household and local community level. While the prospects range from the challenging to the frightening, in situ adaption to at least the early decades of energy descent will be the default response for most people. That suburbia will be transformed there is little doubt, but that transformation is likely to come more via behavioural adaption, new household formation, and piecemeal and incremental retrofitting, rather than large scale transformation driven by government policies and bank financing.

4. RETROFITTING AUSSIE STREET

Since 2003 I have been giving presentations about retrofitting the suburbs as positive responses to climate change peak oil and economic contraction. Most notably was the Australia-wide lecture tour in 2006 with leading American Peak Oil educator Richard Heinberg, in which Richard presented the "bad news" about peak oil and I presented the "good news" about retrofitting the suburbs using permaculture strategies. The core of those presentations was a light hearted scenario that traces the changes in four adjacent suburban allotments in "Aussie St" through the Golden Age of Suburbia (1950s), Rising Affluence and Additions (1960's & 70's), Aging and Infill (1990's) culminating with The Late 2000's Permaculture Retrofit which shows that the transformations at number 2 and 3 Aussie St provide a model of positive transformation while number 1 & 4 remain emblematic of past stages of suburban life.

In this way I pose the question of how will the positive changes at number 2 and 3 influence number 1 and 4. The power of this presentation is that many people can relate to Aussie St as representing aspects of the street they grew up in and because the changes are described in terms of personal and family change rather than demographics, economics, public policies and regulations.

Nevertheless the presentation manages to show how these larger scale systemic forces play out as part of the story. Most significantly, the 4 stages of suburban evolution are tracked in terms of total population, persons per hectare, and floor area and floor area per person.

The following table, which reflects a thought-experiment, shows that meta analysis:

Decade	Population	Persons/ha	Floor Area (m^2)	Floor area/person
1950s	20	50	560	28
1960& 70s	17	42	660	39
1990s	11	27	840	76
Late 2000s	15	37	860	64

What this story suggests is that the public policies that have sought to increase suburban density to make better use of public infrastructure and decrease pressure for urban sprawl have failed to halt the ongoing decline in urban residential density associated with rising affluence, smaller households and fragmenting communities. On the other hand they did cover over more productive gardens, reduce opportunities of solar access, and reduce options for energy descent adaptation.

5. THE URBAN DEVELOPMENT DEBATE

For decades we have had a false debate between those favouring traditional suburban expansion at the fringe and those supporting higher density infill development. Urban planners, posing as environmental progressives, tend to favour infill development. This

debate focused on our growing population (highest in OECD), resource efficiency and environmental protection, has diverted attention from two ugly realities.

Firstly, the strongest driver for growth is not population, but the desperate need to keep the bubble economy of building and development from deflating. Despite the endless propaganda to the contrary, the latest evidence suggests Australia (like the US, Ireland and Spain) has an oversupply of housing driven by credit expansion and collective belief in never ending asset price growth.[1]

Secondly the ideology, policies and development over more than three decades to increase population density have totally failed to stop the expansion at the suburban fringes. More strident calls for increased building density hide the reality that our cities are crowded with more and more buildings, housing fewer people who spend most of their time in other new buildings or going between them on crowded streets and public transport. Urban densification has become a cargo cult that has degraded our urban and suburban landscapes without achieving its stated objective of stopping the urban sprawl.

The debate about urban density and infill development has been so myopic that increasing building density is taken as synonymous with increasing population density. Aussie Street shows the emperor of "urban densification" may have no clothes. Clearly if I had included higher redevelopment with apartments in my Aussie street story, then actual population density would have risen, at the expense of even greater loss of energy descent adaption options.

By contrast, the permaculture retrofit on half the allotments reverses the decline in residential density, while at the same time reducing ecological footprint, increasing productive use of garden and buildings, and rebuilding community connections. Most importantly, it provides an example of how the retrofit for energy descent can occur while scientists continue to study our extinction, urban planners dream of sustainable high-density cities, and policy makers continue to inflate debt-based asset bubbles to maintain an illusion of economic growth.

The increasing residential density shown by the permaculture retrofit in Aussie Street is only the tip of the iceberg. What I didn't do in the presentation was to put numbers on the hours of occupancy by the residents, although it is clear from the story that the trend is for the residents to be away more and more until the permaculture retrofit reverses the trend with home-based lifestyles and livelihoods.

With a spreadsheet to calculate the time away from home (work, commuting, recreation, etc.) for each of my imaginary residents in each decade of Aussie St, the following averages fell out of a first estimate.

Decade	Population	Min Hours away/week	Max hours away/week	Average hrs away/person /week	Percentage away
1950s	20	5	60	29	17
1960& 70s	17	5	60	42	25
1990s	11	10	75	50	30
Late 2000s	15	5	90	39	23

[1] See article at Steven Keen's Debtwatch: 'Analysing the collapse of the global debt bubble': http://www.debtdeflation.com/blogs/2012/07/16/beware-the-rent-seeking-organisation-dont-be-dudded-by-housing-data/

Time away from home is a good measure of demand on transport infrastructure, workplaces, schools, and other public facilities that occupy our cities and use energy and resources. As our suburbs became dormitories, minimally occupied during week days, our cities became more densely developed and crowded with cars taking people to and from poorly used buildings. The perception and resulting debate about development pressures in Australian cities often focuses on public perception of crowding (by people) when in fact our cities are full of minimally occupied buildings and roads to constantly carry people and goods to and fro.

Time away from home can also be a rough measure of participation in the monetary economy both productive (paid work) and consumptive (commuter, school, child care, eating out, most recreation), while time at home is often more associated with activity in the non-monetary household economy whether that be as a producer (child care, housework, food growing, etc.) or as a consumer (most modern recreation).

6. PERMACULTURE RETROFIT OF SUBURBIA

Would proper research of hard data support my story of Aussie Street, and the assertions that come from this modest meta analysis? My challenge to academics engaged in the urban planning debate is to move beyond the same old lines that have dominated the debate over the last 40 years and take seriously the permaculture strategies for suburban renewal.

I believe the behavioural and incremental retrofit of suburbia and similar density residential areas in our small towns and regional centres offers one of the best prospects for creatively responding to a wide range of issues and crises, whether or not those crises collectively represent the onset of the energy descent future that I and many others have articulated.

At the very least we know from the history of previous depressions, wars and other crises of modern capitalism, that when times are tough, adaptive personal and household strategies are how ordinary folk cope. As opportunities in the monetary economy contract, the non-monetary household and community economies of gifting and bartering build rapidly. (This process is now clearly evident, for example, in Greece and other countries hit by the sovereign debt crisis.) As costs of living rise and insecurity increases, household size also tends to increase (e.g. adult children stay at home, aging parents move in with adult children, shared households and more boarders joining existing households, etc.). As the cost of basic essentials (e.g. food and fuel) rise, at least relative to luxuries, then growing food and simple maintenance replaces commuting and travel as defining activities of daily life.

6.1. *Structural Obstacles*

The failure, over more than three decades, to realise the permaculture retrofit of suburbia can be attributed, in large measure, to persistent structural obstacles in our economy. On-going building and infrastructure growth supported by credit expansion has been the primary mechanism for sustaining growth in GDP in consumption-saturated economies. Home ownership becomes more dependent on debt and double incomes. This leads to a collapse in household economies as more and more functions of the household, such as food production and preparation, child rearing and education are outsourced to "professionals" in the monetary economy. In the process, the demand for more buildings and infrastructure (workplaces, shops, child care and entertainment venues) expands, further boosting the building and development industry.

If governments were serious about reducing demand on overcrowded roads and public transport, reducing greenhouse emissions, ecological footprint, reducing household debt, increasing community cohesion and a myriad of other benefits, then they would have public education and incentive programs to encourage home owners to

rent out a room. By taking in a boarder, mortgages can be reduced, household economies of scale improve, informal neighbourhood watch and childcare all contribute to stronger and more resilient communities with better use of existing infrastructure. The downside of such a public policy would be the proportional contraction in the building and development industry, and decline in corporate profits and government revenue to the extent that the increase in household size kick started a revival of non-monetary household economics.

6.2. *Psycho-social Obstacles*

While the policy "downsides" of these changes expose the dysfunction in our political and policy institutions, there are also serious psycho-social impediments to sharing our houses. Most homeowners baulk at the idea of sharing their house because of the loss of privacy. After spending 60 plus hours a week at work and in public, many people need their homes as private sanctuaries to close out the world (except media that one can turn on and off).

On the other hand, older people at home, often value company provided by boarders as shown by programs to match University students from the country to older owner-occupiers with spare rooms.

I believe there are deeper psychological reasons that inhibit people from even considering sharing their house, despite the obvious financial advantages. It is the fear of a tenant taking advantage of oneself. At first this seems illogical because a landlord, especially in one's own home clearly has a distinct power advantage over a tenant, (that no tenant's rights legislation can ever undo), so why should owners fear being taken advantage of by a boarder?

In multi-generational affluent middle class Australian society we like to think of that we are all equal. The idea of exercising power over someone else to protect our interests is distasteful, especially when the relationship includes the intimacy and empathy we associate with being part of a household (or even family). I believe this distaste is so strong in the middle class Australian psyche that we tend to fear we would either let our tenants take advantage of us or alternatively get so angry and upset before we moved to circumscribe or terminate a dysfunctional tenancy.

Inexperience and fear of dealing with conflict rather than conflict itself, maybe the biggest internal roadblock to building larger functional households.

7. AUSSIE STREET FUTURE SCENARIO

In my most recent presentation of Aussie Street (at the Wheeler Centre in Melbourne) I updated the story with another slide showing what happens in the street once the second great depression is well established (notionally in 2015).[2] The early adopters of energy descent at numbers 2 and 3 Aussie St become the agents and magnets for creative change at number 1 and 4. However these changes are much less comfortable and come about through collapsing property values, mortgage defaults, fires, demolitions and squats as well as creative responses that see the people count rise and hours away from home decline.

[2] Current global events are so unpredictable and unstable that this scenario could begin next year or be miraculously held off for a decade.

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1950s	20	50	560	28
1960& 70s	17	42	660	39
1990s	11	27	840	76
Late 2000s	15	37	860	64
2015 2nd G. Depression	20	50	680	34

The non-monetary household economic production in Aussie St overtakes what the first residents achieved in the early post WWII years. This most complex transformation is achieved in the absence of banking credit, with high unemployment and underemployment and contracting government services similar to that already unfolding in several European countries.

7.1 *Energy Descent Prospects*

More negative analysis of the energy descent prospects for long affluent countries with large household debt levels, minimal experience of self reliant living or conflict resolution, suggests much harsher outcomes than occurred in collapsing economies such as Russia or Cuba (early 90's) or Argentina (early 2000s). But at least in Australia we don't have to worry very much about freezing in the dark of a northern hemisphere winter with no food. Our relatively benign climates and ability to grow and/forage some food all year round should be reasons to see that the retrofit of suburbia in Australia and New Zealand has many advantages compared with continental North America or even the UK and Ireland.

In addition to these inherent climatic advantages, the economic conditions that are already unfolding in Europe, North America and other long affluent countries should be fair warning that we need to begin immediately to get our priorities straight to prepare for adapting in place wherever that might be. For most Australians that place is suburbia. In the process we bypasses irrelevant ideological impasses generated by left/right political ideologies or pro development vs. environmental conservation agendas.

I believe the evidence of global instability leading to energy descent if not total collapse is so overwhelming that it is incumbent on everyone to begin taking personal and household responsibility for reorganising their lives to adapt in place (or consolidate with family or friends). Paying off debt, teaching our kids to garden, and turning our hobby into a business is not going to solve the problems unleashed by permanent energetic and economic contraction, but after forty years of public policy denial of the limits to growth conundrum by government, the media and other sources of power and public policy, the bottom up adaption strategy is the only one with any remaining utility.

7.2. *Self-Reliance and Activism*

Many of us who have been on this path for a long time, know that personal and household level change is not enough. Community gardens, Permaculture, Transition and similar groups, Local Energy Trading Systems (LETS) and Co-operatives, Community Supported Agriculture (CSAs) and other strategies for community adaption and economic relocalisation have absorbed our energies.

It is hard to believe that many of the same people who have been trying to do it at home and in the community have often also been at the forefront of advocacy for proactive policies from the top. I believe it is now clear from three decades that change

from above is largely making things worse. For those activists who cannot face the implications of the evidence and remain committed to top down change, I suggest a focus on local government is more likely to produce useful outcomes with less risk of unintended consequences than state, national and international systems.

More generally, effort to get governments to actively respond to the crisis should be replaced by efforts to reduce the regulatory impediments to the revival of household and community economies. In any case, without workable and attractive examples of household level transformation everywhere then our residential landscapes being a wasteland will become a self-fulfilling reality.

I believe we can most effectively look after our families and ourselves, build community and be at the forefront of political action, by practical home-based action.

- Network for inspiration and information
- Get producing and support local producers
- Involve kids and their friends
- Make contact with neighbours
- Gift and barter to consolidate connections
- Review needs, reduce consumption
- Share your place: take in a boarder
- Share your car: carpool and pick up hitch hikers
- Creatively work around regulatory impediments
- Get out of debt / work from home
- Retrofit for the future, not speculative gain
- Join or form a local permaculture/transition group

Readers can watch my 'Retrofitting the Suburbs' presentation online at: http://www.youtube.com/watch?v=2cjhQWdbqE4

For an extremely thorough and useful guidebook of practical actions for building resilience, please see the Simpler Way Project here: http://simplerway.org/

References

David Holmgren, 1995. *Melliodora: Ten Years of Sustainable Living*. Holmgren Design Services, Hepburn, Victoria.

David Holmgren, 2009. *Future Scenarios: How Communities can adapt to Peak Oil and Climate Change*. Chelsea Green, Vermont.

See generally: http://www.holmgren.com.au/