Catalysing design principles through the dreaming of sustainable subtropical cityscapes: the collaborative construction of new place identities

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Abstract

This paper addresses the question of how to open up pathways and build capacity to facilitate the movement towards sustainable sub-tropical cities. The focus is on outlining a collaborative planning and co-design process that can help catalyse the emergence of sustainable place-habitats and so re-weave and colour anew the tapestry of our sub-tropical cities. Cities are portrayed as self-organising complex adaptive system phenomena, being constantly re-shaped by local and global social-political, environmental, cultural and economic forces as well as planning regimes. While constructing a sustainable city is at essence a design process incorporating new sustainable practices and legislation to reinforce their use, these steps are necessary but not sufficient. Sustainable sub-tropical city-making could be re-thought as a dreaming-re-storying process. This paper explores a new co-design process, which can channel collaborative efforts around re-inventing sustainable place-habitats across the cityscape. A further outcome of this co-design process is the alignment of the emergent design principles and planning actions that can trigger the re-storying of a new sustainable sub-tropical city. Besides a new co-design process, we also advocate the building of sub-tropical city learning networks to facilitate the cross-fertilisation for Dreaming sustainable sub-tropical cities.

Keywords

Self-organisation, sustainable urban place-habitats, bottom-up top-down planning, co-design

Introduction: the changing forces shaping cities

Cities can be described as dynamic, evolving entities that are continuously being re-worked. This on-going process of renewal and change is partly in response to differing external, internal and global economic forces and emergent, social and community dynamics. The planned remodelling of the old inner city suburb of Redfern in Sydney is a poignant example of this struggle (Dick, Goodsir, & Norrie, 2004). Contesting cultural forces and planning narratives are seen in the differing design aesthetics interspersed across a city. The evolutionary form of a city could be said to express the aspirations and collective dreaming of its people. The CBD of Chicago for example, to the authors, stands as a modernist monument at the edge of the Great Lakes and the rich plains of North America and announces a major world commodities and financial centre.

Over time, cities seem to develop their own unique identity and response to their site, terrain and climate; they hold fragments of past storying, appear as if overlaid and colonised by the design shaping of new, more contemporary cultural stories and economic forces. A city like Brisbane city resembles to us a unique Australian evolving cityscape. The city now appears to hug its river; as it grows it encompasses a dynamic tapestry of different spaces, uniquely defined places and architectural styles, showcased by solid, colonial buildings, modernist city lines, the riverside warehouses of another economic time, giving way to distinctive Queenslander forms and the creeping suburbia. This, with its subtropical landscaping both colours and makes Brisbane distinctive from other Australian cities. The sustainability of sub-tropical cities while full of challenges allows more opportunities for innovative housing and place design because of the temperate climate as opposed to the stricter design constraints for cities in more extreme climate zones. Nevertheless, a sustainable urban habitat is context dependent or like good architecture, necessitates sensitivity to site and locality.

Manuel Castells (2000) writes of how our major cities are being re-shaped by new global economic forces and the information network technologies that are opening up international markets. He writes of how this new global narrative requires a different type of infrastructure enabling a faster exchange of information, finance flows and a new trans-world cultural commodification; of how it is also ushering in a new architectural form that neglects the local to resemble a new 'ahistorical, acultural architecture' of dominant interests (Castells, 2000, p. 449). Likewise Relph (1993) talks of how our cities and their public spaces have been colonised by the modernist narrative and universal planning practices to resemble now in part, a 'landscape of rationalism': the focus on place making has subsequently been sidelined. A somewhat cynical categorisation of the recent aesthetic building design could be of extending functional straight lines and sharp edges, sometimes now, decorated with pastiche panels; curves and organic forms being viewed as arty one-offs.

The new informational cities will not necessarily need the same expanse of dormitory suburbs and transport infrastructure that streams into a central business districts. Rather, the new cityscape could be characterised by a number of business nodes or clusters, enabled by the new e-communication technologies and interconnected by integrated cross-city transport networks, Sydney Mayor Clover Moore and then Premier Bob Carr have at times, enthused about a new future based on constructing urban villages as a way to give social meaning and connection for those now moving towards more home office work (Dick, Goodsir, & Norrie, 2004). But the required new transport network infrastructure alone presents a significant future economic burden and community dislocation.

Sandercock (1998) seeks to focus our attention on the new emerging era of difference and multiculturalism; where emerging future cityscapes are increasingly contested as communities push for more inclusive planning practices and planning development applications are more regularly disputed. Her work, *'Cosmopolis'*, criticizes the prevailing modernist planning approach with its expert, top down, instrumentally rationalist and means –ended focus and

calls for a new type of 'city dreaming' that reflects the growing cultural diversity and seeks a new sensitivity to community desires and environmental concerns.

However, our cities now face increased turbulence with an array of new, rapidly assembling, economic, social and environmental forces that will impact our cities beyond what Castells foresaw. An ageing population re-settling from the suburbs into harbour and beachside apartments may have helped re-new Newcastle but smaller place communities and towns along the NSW and the south-eastern Queensland coastal regions are seeing increased flows that threaten to swamp local infrastructure and some ecosystems e.g. Byron Bay. Already Perth and regional cities such as Goulburn faces impending water crisis aided by global climate change presumerably and our northern Australian tropical cities are warned of facing more frequent cyclones and tidal surges by the CSIRO. Yet new major coastal developments along the sub-tropical east coast of Australia promote their unique place community identities, assured rising asset values but not their long-term sustainability.

The rapid growth of Brisbane is posing a major challenge in developing a sustainable transport strategy (Brisbane City Coucil, 2001) and this is just at the time of the appearance of higher fuel prices and the increased likelihood of a Peak Oil scenario. Developing far-flung dormitory suburbs, connected by major freeways, may come to be seen as a planning folly at the impending passing of the automobile-cheap oil, shaped cities and fossil fuel economy (Dodson & Sipe, 2005). Discussions about re-thinking the urban planning priorities for transitional strategies for developing sustainable urban places as a result of Peak Oil[1], have already begun in both Canada and Ireland[2]. We may be implementing good planning with say the South East Queensland Regional Plan but this is still about directing and providing for growth.

In this new rapidly emerging world, more flexible, adaptive planning processes are needed to re-work our cities into new sustainable forms. Part of this involves a re-thinking of how we go about the re-design and interconnecting of eco-places, the changing role of planners-designers and how to tap into the place knowledge about what will work in their communities.

New ways of seeing, thinking about and planning sustainable cities: cities as self-organising emergent systems.

Are cities just malleable urban spaces and forms, responding over time to different socio-economic forces and particular design aesthetics? Castells (2000) presents another version of this mental model or construct for the new global networked city as 'a space flow'; now more of information, cultural commodities and investment flows. But can we plan the development of sustainable cities using the old mental models of cities as shaped spaces or socio-economic flows and the existing ways of thinking and top down expert led planning approaches? Is the issue of developing sustainable cities then just one of just applying new planning regulations and development controls, devising new sustainable BASIX design

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[1] Peak Oil is defined as the coming predicted scenario of an on-going shortage of oil supplies in a time of rapidly rising demand in the global economy and the possibility of a future with persistently high petrol prices. The recent high oil prices and declining reserves may be a sign of the unfolding Peak Oil scenario. The original study by M. King Hubert (1956) predicted this economic scenario to be some years off but the advent of the rapid growth of the Chinese and Indian economies may bring this prediction forward together with the likelihood of energy supplies being disrupted with a second Middle East war in Iran.

[2] Leeming (2005) calls for re-designing our cities in 'more compact and diverse ways' with planners and communities 'creating liveable and environmental responsible places', in light of a Peak Oil scenario occurring soon in Canada. In Ireland, the Kinsale Council supports initiatives and policies enabling sustainable town transition (Southern Star Staff, 2006).

parameters[3] with supporting, alternative energy incentives and new tax regimes? These authors think not and several reasons are advanced here as to what new possible planning approaches and options are possible.

A comprehensive package of tax measures is certainly needed to facilitate sustainable cities. Tanya Plibersek (2006), an Australian Federal MP, talks of how the present tax system privileges private car use over incentives to using public transport through fringe benefit taxes on automobiles to the order of AUD$1billion according to a joint members, Federal House of Representatives report, *'Sustainable Cities'* (refer: Standing Committee on Environment and Heritage, 2005) recommends that new fringe benefit tax incentives need to be extended to those using public transport to work. This is a much-needed start towards dreaming up sustainable cities.

However, the underlying mental model of cities as urban spaces and forms that can be effectively shaped through planning controls, outlined above, misses some of the deeper, underlying dynamics that are continually shaping cities.

Innes & Booher (1999) write of how the issue of sustainable development of a metropolis is an example of complexity and of dealing with complex systems. Steven Johnson (2004) portrays cities as self-organising emergent phenomena characterised by the clustering together of like communities and business enterprises in particular place localities that come to develop their own unique identity. Obvious examples include the Left Bank in Paris, the Village in New York, Chinatown in Sydney. Individuals and like communities observe, inform each other and develop adaptive responses; they swarm, re-think and cluster. However, the human agent, neighbourhood community and business network is more architect than worker bee colonies. A Sydney Architect-urban designer, Patrick Carrigan (2006) writes of how "a city is not made by design but by the sum total of incremental actions by many over time in permitting all manner of projects to proceed" which somewhat resembles the notion of a city as a self-organising emergent phenomena. Jane Jacobs (1961) depicts New York in similar terms in her analysis of the *'Death and Life of Great American Cities'* where streetscapes and urban villages need to be allowed to self-regulate in order to enable a vibrant and safe city life to emerge.

Cities typically self-organise urban clustering patterns and Allen (2004), through non-linear modelling, has reproduced such patterns, reinforcing this notion of cities as dynamic self-organising systems. Batty (Batty, 1995; Batty & Longley, 1996) has written of the Fractal City and calls for more realistic planning approaches based on utilising these bottom-up self-organising processes that shape cities. Makse, Halvin & Stanley (1995) modelling work casts doubt on the effectiveness of top down codified planning approaches to bound or shape the evolving structure of cities.

The authors also envisage cities, as a particular type of self-organising complex adaptive system with interdependent, social, economic, cultural and environmental sub-systems[4]. Cities grow or decline and evolve in response to both external forces and their own internal, bottom up self-organising processes. Cities resemble living systems; they adapt to change and like

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[3] The NSW Building Sustainability Index, or BASIX Scheme, implemented for new housing development requires a 40% reduction in water usage and a 25% energy savings (Lowe, 2004).

[4] This particular ecological, theoretical construct of cities as self-organising phenomena as a type of complex adaptive systems, with their interdependent social, economic, cultural and ecological sub-systems forming a layered evolving whole, is what Guderson & Holling (2002) calls a 'panarchy'. The panarchy theoretical metaphor envisages stepping beyond hierarchical institutional dominated structures to new inclusive network governance structures with an enhanced adaptive learning capability (Walker et al., 2002)

other complex adaptive systems, such as ecosystems and economies, at a certain scale, are difficult to manage by conventional top-down planning approaches. Soft system thinkers such as John Sterman (2002), describe instances of 'policy resistance' to top-down initiatives such as urban renewal schemes that either fail to achieve the desired outcomes and or invoke unanticipated system feedback.

This alternative systems perspective of cities indicates that effective solutions or key leveraged actions can only emerge through collaborative conversations that build a rich shared systems picture of the city, involving all the key stakeholders. But planning that focuses on catalysing emergent sustainable solutions requires a new type of civic, distributed leadership style (Capra, 2002; Lewin & Regine, 1999) that we are as yet accustomised to in civic as against business organisational cultures.

Organisational learning theorists like Stacey (1993), evolutionary ecologists such as Holling & Meffe (1996) and Gunderson, Holling & Light (1995) who share this complexity-framed perspective, have pointed out the limitations of the old control and command management and its top down planning pathology. This is to say cities and regions share similar issues with planning and managing the sustainability and resilience of other complex social-ecological-economic systems like organisations, fisheries, river-lake catchments and coral reef-tourism habitats.

Fabbro (2001) calls for developing new local capabilities in the building of sustainable city-regions. Todd (2005), an eco-designer calls for us to study and mimic nature's self-organising and self-designing capability in developing adaptive solutions and building sustainable futures.

The question then arises as to what other types of planning, re-design or new dreaming process[5] are emerging to enable the planning of sustainable complex systems such as cities?

A bottom-up planning paradigm looks to assemble and synergise the distributed knowledge and advice of self-organising, locality based, social communities and business networks about the most viable and appropriate responses needed to adapt to new conditions and a changing environment. Examples of experiments in this new planning paradigm for building sustainable urban habitats are limited. One has been the planning of sustainable public transport systems in Curitiba, Brazil[6]. This example also shows the potential limitations with this methodology when applied to a rapidly growing city going beyond a certain size. A second example concerns eco-city and sustainable housing co-design in Fremantle, Western Australia with the Pinakarri Community (Crabtree, 2005).

A bottom-up top down planning approach is where communities, stakeholders, councils and other agencies discuss and advance specific place and context dependent advice and where design principles are then conflated into an overarching concept plan and strategy. Councils and agencies can then incorporate this advice and design principles into their own strategic development plans. Unfortunately, recent moves towards place based or co-management

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[5] Dreaming sustainable subtropical cities refers here to a new sustainable narrative and re-storying of cities; it denotes different ways of seeing and thinking (systems, holistic) ways of knowing (epistemologies) and being (ontologies) and new sets of relational ethics as a way of re-organising and re-designing sustainable urban habitats. This notion of dreaming, akin to the Australian aboriginal understanding, is more related to Toltec wisdom (Ruiz & Mill, 2004).
[6] Refer to web discussion papers *Curitiba – Designing a Sustainable City (Parkins, 2006)* and *Cities of the Future: Dream or Nightmare* (Haughton, 1999)

arrangements have been abandoned in NSW in favour of more centralised and ministerial overseen planning guidelines and decision-making processes[7].

The authors have successfully field-tested a new type of collaborative conversational systems mapping methodology as part of this project to refine this bottom up top down supported sustainable planning approach. Four examples are given of how collaborative conversational systems mapping was used to capture and synergise this distributed social learning and to derive emergent solutions and design principles for sustainable pathways.

Catalysing Sustainable Cities

Humans are place-makers; we seek company, comfort, stimulation, peace and respite, places for refuge, reflection or to just watch others and nature. Places evolve with their own identity and seem imbued full of different experiences and meanings. Think of the places you and others seek out in cities or even your own homes and gardens; part of what the Irish poet and writer John O'Donohue (1998) describes as our longing and exploring our intimate need to belong in this postmodernist cultural age.

The Brisbane River re-development and west bank place-making is a good example of place-making; of how re-designing, integrating and upgrading old spaces and infrastructure can revitalise a city and open-up new initiatives and city life such as with the River Festival.

While constructing a sustainable city is, at essence, a design process incorporating new sustainable practices and legislation to reinforce their use, these steps are at best necessary but not sufficient.

Our view is that sustainable sub-tropical city-making also needs to have a major focus on supporting collaborative efforts around building sustainable place-habitats across the cityscape tapestry. Secondly to then globally showcase and network these stories and what has been learnt, encouraging the reproducing of new creative variants of what other communities and stakeholders have achieved and learnt in their own sustainable city habitat building and place making. This perspective is informed by the insights of organisational learning and the importance attached to building self-organising and supporting learning communities to explore novel solutions to build sustainability as advocated by the likes of Wenger (1998).

Suzuki & Dressel (2002) argue that the possibility of sustainability only comes about from people making a long-term commitment to a locality, and to take on responsibility for how it evolves. A commitment to steward how places, regions and cities evolve, to become custodians, can only come with having a sense of ownership and belonging and the ability to influence and shape where we live. Communities and business enterprise networks need to have some buy-in into how their locality or part of the city develops and interconnects and in turn is supported with enabling infrastructure services

Sustainable subtropical cities can be thought of as a re-storying or new dreaming process: it incorporates the operationalising of a new narrative and collective building of a new place identity. We feel sustainable sub-tropical cities can only arise if communities and stakeholders are deeply involved with planners and designers in determining how best to move forward and to define the new (sustainability) narrative locally.

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[7] Disappointment with this initiative was expressed through personal communication with community planners on the far North Coast of NSW and the authors own involvement in discussions around the place management model being undertaken in Coffs Harbour hinterland.

Sustainability is more a social learning process and journey (Meppem & Gill, 1998), about path-finding towards a new identity. It requires of us to develop new holistic, systems ways of thinking, re-imagining, determining and co-designing new initiatives, new systems and practices. These can include re-worked transport, power, food systems and community-social landscaping. It also requires us to review and monitor what's worked, what isn't, identifying and addressing the unintended system consequences and then developing locality and city wide policies and legislation to reinforce whatever array of designs have been found to be effective. *Bottom-up top down planning for sustainability* enables communities, other stakeholders, councils and agencies to review feedback across the city system as to what is also a sustainable initiative. This type of collaborative planning builds the capability of cities and place localities to adapt and innovate sustainable solutions.

But sustainability is also place and context dependent. What is sustainable in one cityscape may not in another; that's why focusing on addressing the situation and needs of sub-tropical cities is an important initiative.

Einstein remarked that "we need to create new thinking to solve the problems of the past; we can't keep using the same thinking that created the problems in the first place"[8]. We also believe we need new terms that reflect our changed, holistic thinking necessary for solving the problems of creating sustainable cityscapes and places. That is why we use the term place-habitats which is intended to explicitly link and emphasise the ecological interconnection that social places have with their natural environment

The question then arises, what will be the new roles for planners in such a collaborative planning process? Relph (1993) supports the role of expert planners and designers becoming more supportive and enabling. We would advocate that the new roles for planners, within this emergence paradigm, is as facilitators of collaborative conversations and social learning about what constitutes sustainability in particular city or regional places and contexts. Another new role is as catalysers of design principles and emergent solutions for sustainable futures.

Innovation Through Collaboration: Examples of Collaborative Co-Design Processes

Outlined here are four collaborative planning exercises that use a deliberate, bottom-up top-down approach to re-imagine, re-think and co-design sustainable places, regions and small cities. The maps presented here, show the key themes, design principles and the conceptual essence that arose out of different stakeholder-agency-community conversations. These maps were subsequently used to underpin formal plan making. Each map was returned to the community to ensure its validity and honouring of the aspirations presented in the envisioning conversations. The maps were seen to embody a shared understanding of sustainable development and identified key leverage actions needed to realize the rich, diverse vision and collective agreed goals (Meppem & Gill, 1998).

The collaborative planning conversations below, sought to catalyse the self-organising creative processes that shape places, cities and regions to produce innovative solutions in co-designing sustainable futures.

North Coast Round Tables: Towards a Sustainable Future

These regional stakeholders discussions about a transition towards a sustainable Northern Rivers region were an initiative of the Community Learning and Innovation Centre (CLIC) Network, a community group aiming for sustainable creative regional development, Southern Cross University and the Northern Rivers Regional Development Board.

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[8] Quoted in (Meppem & Bourke, 1999).

Each round-table conversation takes place in a different locality across the region and focuses on different issues around the design of a sustainable region. So far, five stakeholder roundtable discussions have been held on different themes with over 300 participating, representing communities, regional council, agencies and business enterprises. The first conversation, in Yamba, in August 2005, identified the key design principles and main issues to be addressed in a transition to a sustainable regional future (Figure 1). All the conversation maps are returned to the community on an open access website (CLIC Network, 2006).
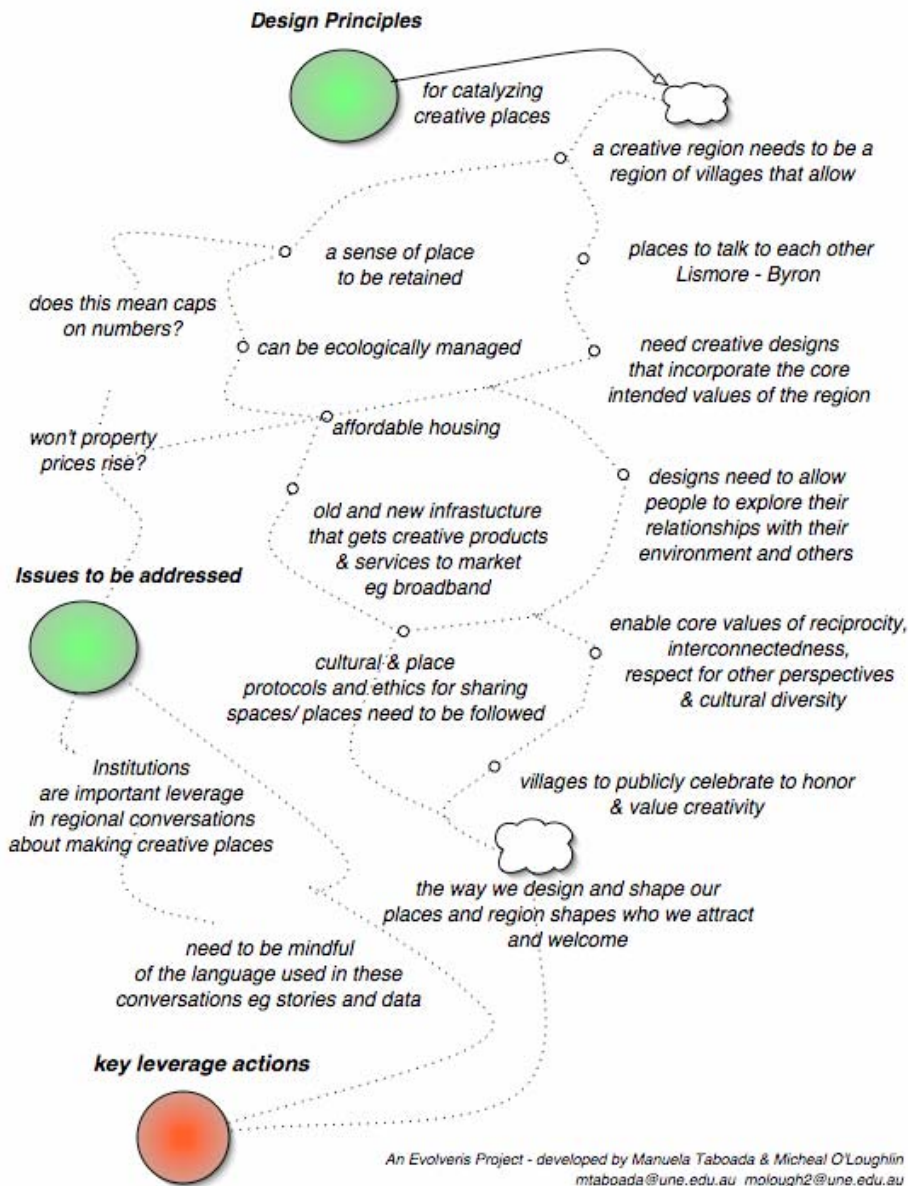

Figure 1. Conversational Map of the first Northern Rivers Regional Round Table: Towards a Creative and Sustainable Futures, Yamba, August 2005.

These conversations are open ended bottom-up processes that are informed by specialists in each relevant area; without any imposed agenda, they allow for self-organisation and creative unexpected solutions to emerge. Newman (2005) emphasises that a shift from a command and control model to a self-organisational model is crucial to enable sustainable development; she adds that: "this type of model is more likely to succeed if it can emerge organically from unsustainable behaviour in manageable steps" (Newman, 2005).

Waterfall Way Track network

The concept map illustrated below (Figure 2) demonstrates how collaborative conversations can generate emergence and novelty. This cross-regional planning study sought to access local landholders', and communities' place knowledge and expert agency advice on what sort of walking track initiative was viable, and how a regional eco-tourism industry could be partnered and co-managed in a sustainable way.
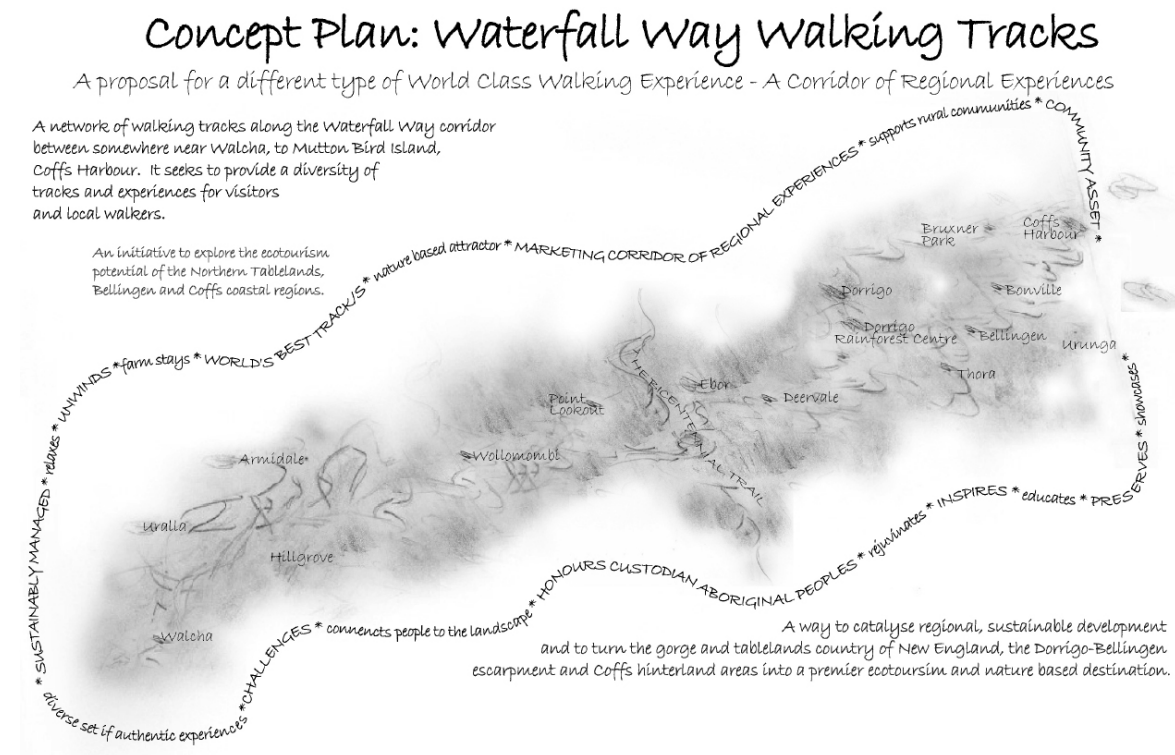

Figure 2. Concept Plan for the Waterfall Track network, Walcha to Coffs Harbour (O'Loughlin, van der Lee, & Gill, 2003).

Coffs Harbour Rural-Hinterland Places

These particular community maps of two Coffs Harbour hinterland, rural places (Figure 3) identify the strategic initiatives seen as catalysing a sustainable pathway. Similar community maps were used to underpin the Coffs Harbour Rural Lands Strategic Plan. The overall aim of this project was to undertake a holistic, inclusive assessment of rural area development options and opportunities (Gill, 2001).

In the Lowana Map (Figure 3A), the community identified, for the Coffs Harbour planners, some key leveraged actions that will enable sustainable place development in their instance. For example: the town beautification using tree corridors; the upgrading of main road access at two difficult corners and; and the renovation of a multifunctional community recreational accommodation lodge facility.

The Bonville Community Map (Figure 3B) identified two major community initiatives as building a village hut with provisions for cafes and elder citizen open air meeting places with a co-ordinated vegetation and tree corridor development on private an public space, to allow native animal pathways. An interesting feature of the Bonville Map was the identification of a measure of the visibility of stars as important in maintaining the community's sense of place.

(A)
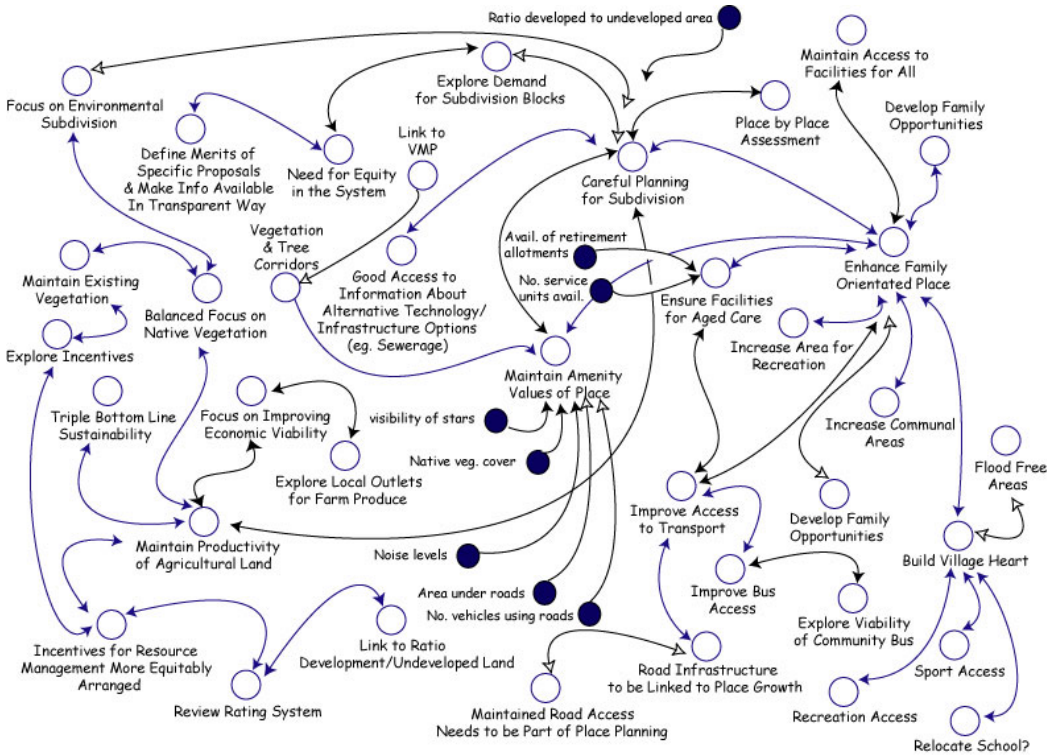
(B)

Figure 3. (A) Lowana Community Map and (B) Bonville Community Map. Coffs Harbour Rural Land Project (Gill, 2001).

Re-visioning Armidale City

What emerged out of this stakeholder envisioning process was the potential pathway of Armidale to become an Arts and Culture Centre. This initiative was seen as adding to the sustainability of the city-region, now heavily dependant on the local fine wool and education industries. While not taken up by the Armidale civic leaders, the local artistic and cultural networks have self-organised to realise this vision.
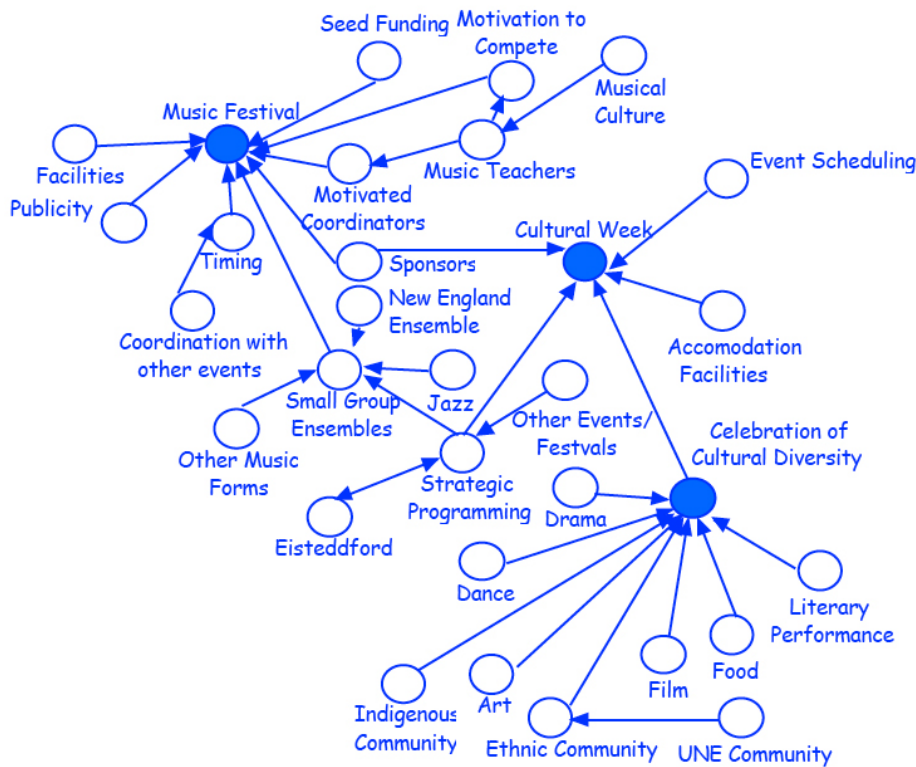
Figure 4: Part of the Armidale Community Conversation Map (Hub 5). Building the Future - Armidale (Gill, 1998).

Re-thinking Design and the Construction of New Sustainable Urban Place-Habitats:

Through the case studies related above it is easy to realise the potential of the collaborative process in dreaming, visioning, and designing new sustainable pathways for cities or regions. These planning conversations led to the development of a shared understanding and social learning about what is envisaged as a sustainable pathway for each place.

This conversational co-designing processes follows Meppem & Gill's (1998) understanding of sustainability as a learning process that needs to be "inclusive and collective, based on shared mental models and that will supply unified and shared perspectives of sustainable development".

The authors see planning as a dynamic on-going process that needs to be capable of evolving with the cities' self-organising tapestry. This new planning approach for designing sustainable urban habitats is envisaged as a flexible evolutionary conversational learning process that fits with the concept of if cities as complex adaptive systems. This view is in accordance with Newman (2005) who states that: "Human societies do not settle down into stable patterns for long. They constantly innovate, grow and change posing a challenge for those trying to adjust our interactions with the biosphere".

Figure 5 shows the evolving co-design model that underpins the four case studies outlined above. This model accommodates the concept of sustainability as collective learning process. By starting with an exploratory open question, the model allow for a multiple array of un-predicted answers and un-expected emergent solutions for the issues at hand. There is no pre-defined agenda, rather it is established by the stakeholder-agency-community during the conversations.
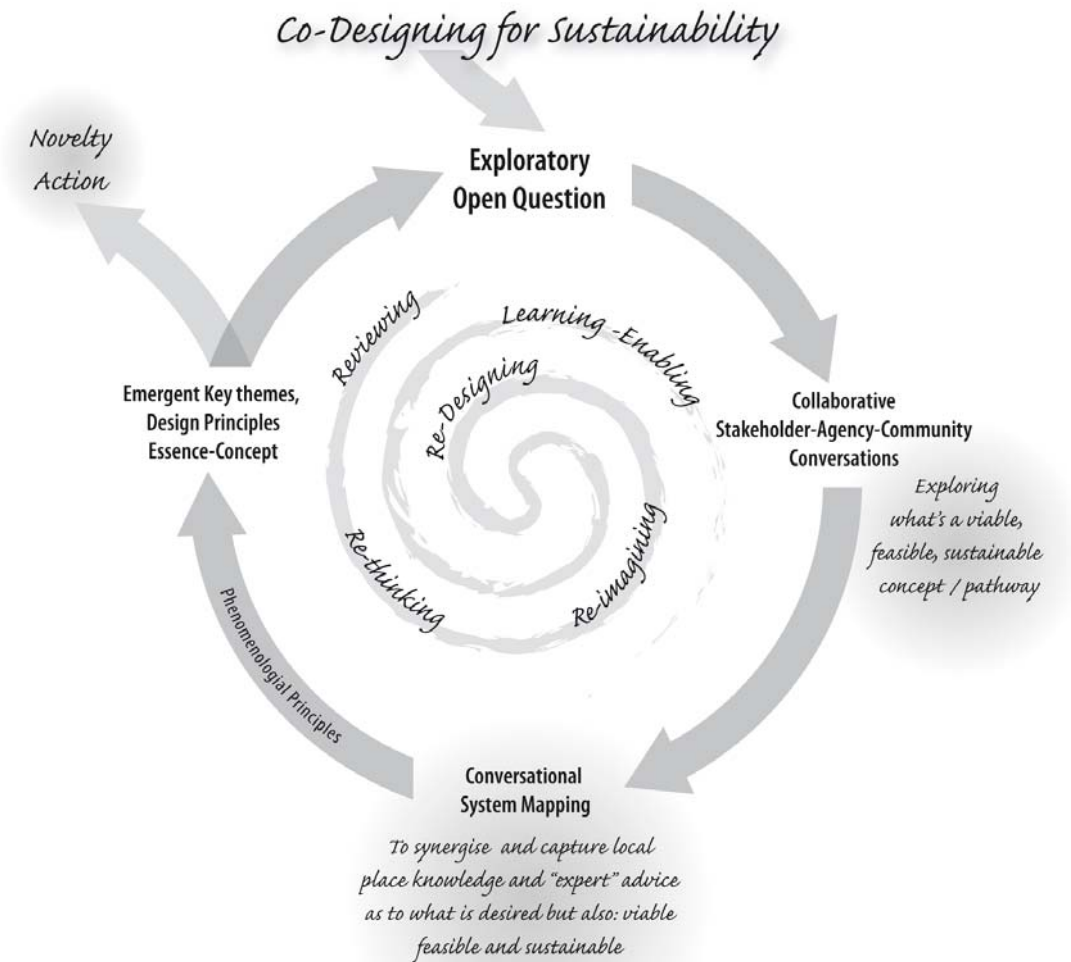
Figure 5: Co-Designing for sustainability: reviewing, re-thinking, re-imagining, re-designing and learning-enabling; an open collective process that enables emergency, novelty and genuine self-organised actions.

The collaborative mapping processes has been shown to capture the key themes and design principles that arose in the dialogue and helped apprehend the essence of the conversations becoming a very clear representation of the shared vision and understandings. This physical grasp of the wide dialogue can be the main learning tool that supports genuine self-organisation and action to happen.

The *reviewing, re-thinking, re-imagining, re-designing, enabling* is an ongoing local process that happens inside the communities and is supported by expert agency knowledge and working parties to help assess what is feasible and viable. Planning for sustainability is envisaged here as an on-going learning dialogue that enables bottom-up top-down self-organisation.

Co-designing for sustainability (Figure 5) in each locality weaves the evolving city tapestry. A kind of 'contagious' process is then established, that self-organises and multiplies itself into an *evolving sustainable city tapestry* (Figure 6) initiating and spreading the notion of sustainable

place making. Sustainable place making is envisaged as an on-going place-based conversations and a review-implementing of a set of partnered integrated self-organising practices involving re-designed water, landscape vegetation, energy and waste management systems.

The local conversation maps become comprehensive tools for a distributed network to spread the learning experiences towards sustainability across the different localities.
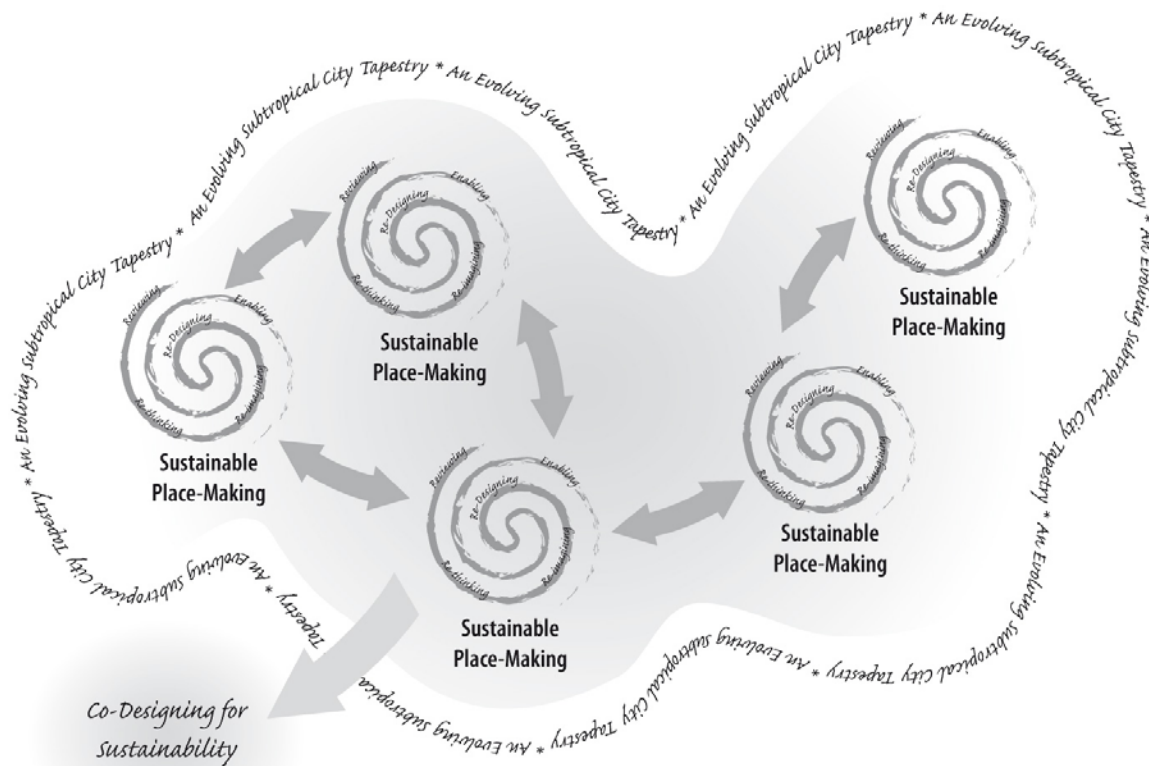

Figure 6: Dreaming Sustainable Sub-tropical Eco-Places Localities as a learning network

In contrast, the conventional planning approach whether consultative or participative, still revolves around top-down, instrumentally rational approaches that are based on established goals, set agendas and well defined methods that apply "one particular 'way of seeing things' that is taken to be correct, objective and self-referentially legitimised by its advocates" (Gill, 2005).

Instrumentally rationalist thinking entails linear stages and step-by-step methods and employs pre-determined tools to be applied in achieving pre-established goals. This kind of expert led methodology, however, allows for very little involvement of the community and stakeholders throughout the creation process, generating little ownership and limiting – to the design team – the possibilities of emergence and creativity to happen.

The co-design process towards sustainability instead aims to be adaptive, self-organising, flexible, interactive, with limited hierarchical relationships, that allows for wide learning, creativity and emergence to arise.

An open-ended conversational process that involves community and stakeholders at the design level we feel can generate emergent designs that coherently and holistically respond to the visioning and desires of the community.

A bottom-up top-down planning process entails new roles for the planner-designer namely as a facilitator of collaborative conversational processes and catalyser of novelty and collective creativity. The planner/designer leaves their roles as expert consultants and central creators to enable the emergence of new concepts, in a collective process that:

- starts from understanding the local reality (problems, issues, challenges and expectations);
- includes the perceptions and interests of all stakeholders, considering that each of them holds different assumptions on reality, truth and interests;
- is context and social (hermeneutically) sensitive;
- is focused on the process, allowing for emergence.

The authors see our role as planner/designers in using bottom-up top-down processes is to help 'illuminate' (Moustakis, 1994) the path ahead to sustainable futures.

Unique Possibilities for Sustainable Sub-Tropical City-Making

Sub-tropical cities represent particular opportunities and difficulties. Favourable conditions such as location and pleasant climate tend to attract people. Rapidly growing populations catalyse changes in the self-organising tapestry of the city that re-shape the structure, dynamics and identity of the place. These changes often occur more quickly than the natural self-organisation of the system can handle, generating negative feedback effects such as pressure on water availability, surrounding rural vegetation belts and waste management. Climate change is likely to accentuate these difficulties. Examples include Brisbane and Byron Bay, in Australia and San Cristóbal de las Casas, in Mexico (Liu et al., 2006).

Sub-tropical climates, in particular, offer a wide scope for place-based learning communities, partnering with expert technical industry and planning advice, to explore integrated local vegetation and water recycling initiatives as part of a pathway to sustainable city future.

In Brisbane, one pilot household, adopting water-farming principles since January 2004, has harvested 250,000 litres of rainwater, recycled a similar figure of waste water and managed to re-channel storm water to soak the household's soil, re-establishing the natural water cycle (Colleby-Williams & Poole, 2006). While policy guideline initiatives such as Water Sensitive Urban Design in Brisbane are necessary (Young, 2004), agencies and councils could support and facilitate this kind of bottom-up local initiatives for water recycling and treatment that are integrated with suitable landscape vegetation re-designs. Locality water community plans could be used to improve the effectiveness of the city water cycle. Cleantech water industry innovations need also to be part of this collaborative stakeholder/partnership effort.

Landscape vegetation re-designs can also contribute to addressing the heat island effects in sub-tropical cities. For instance, densely vegetated areas or oasis in the sub-tropical Botswanna city of Gaborone, were seen as effective in urban climate control with evapotranspiration helping to moderate temperature by up to 2 degrees celscius (Jonsson, 2004).

Agencies and councils can shift their roles from regulators and controllers to catalysers, facilitators, technical advisers and supporters of local sustainable self-organised initiatives.

The great opportunity for agencies and councils is to collectively trigger, align and harness the creative self-organising power of communities to drive integrated water vegetation landscape

re-designs. This is an alternative collaborative pathway for the construction of sustainable sub-tropical cities and represents the essence of the presented bottom-up top-down partnership building methodology (Figure 7).
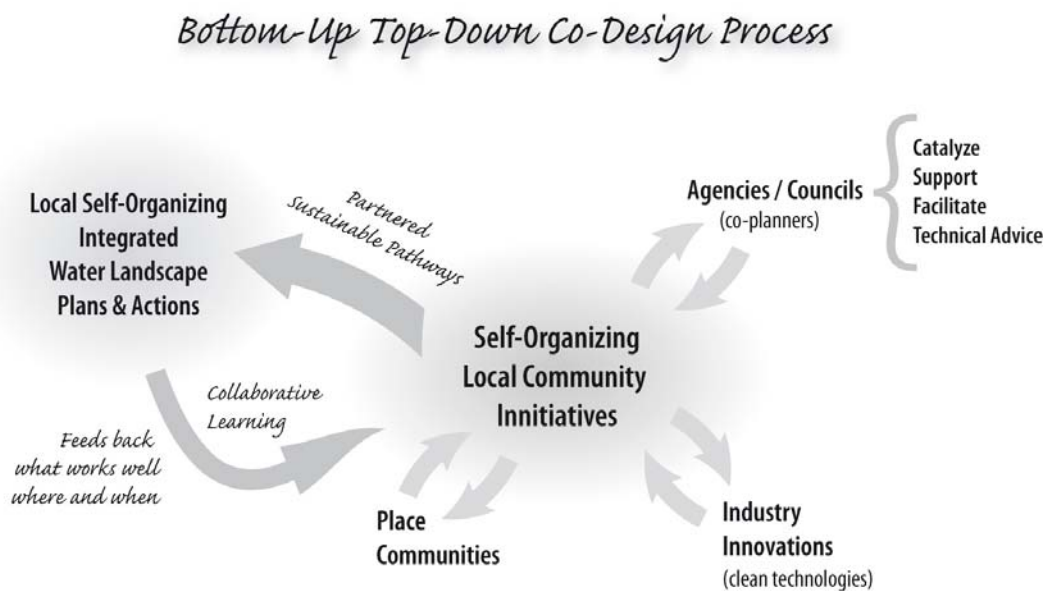

Figure 7: Bottom-up top-down co-design process: an alternative collaborative pathway for the construction of sustainable sub-tropical cities.

Conclusion

The co-design methodology suggested in this paper fits with and supports the concept of a city as a self-organising emergent system and sustainability is understood as a collaborative learning process.

The collaborative processes undertaken in the case studies described above, showcase a co-design model that enables a collective envisioning, re-thinking and re-designing of places and that allows for the surfacing of shared understanding of emergent sustainable pathways and futures.

Dreaming sustainable sub-tropical cities concerns the catalysing of an evolving city tapestry of urban eco-places that showcase, inform, support each other and hopefully replicate like a self-organising social virus.

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