How to be a City

Open-mind-III and the synergistic pathways from smart to wise

Joe Ravetz

Earthscan / Routledge

Ch4: CITIES
## CONTENTS

1) CITY-SYNDROMES .................................................................................................................. 5  
   Change mapping .................................................................................................................... 8  
2) NEIGHBOURHOOD-III ........................................................................................................ 11  
3) HOUSING-III ....................................................................................................................... 15  
4) RETROFIT-III ...................................................................................................................... 19  
5) CITY-REGION-III ............................................................................................................... 23  
   City-regions in co-evolution .................................................................................................. 26  
   Accessibility & transport ..................................................................................................... 29  
   Peri-urban-III ..................................................................................................................... 30  
6) CIVIC-DESIGN-III ............................................................................................................. 32  
7) CITIES-PATHWAYS ............................................................................................................ 37  
   Urban development pathways ............................................................................................. 40  
   Urban regeneration pathways .............................................................................................. 41  
   Pathways & next steps .......................................................................................................... 42
"Cities, like dreams, are made of desire and fears, even if the thread of their discourse is secret, their rules are absurd, their perspectives deceitful, and everything conceals something else." (Italo Calvino)

"a city is more than a place in space, it is a drama in time” (Patrick Geddes)

"The City is not a problem, it is a solution" Jamie Lerner, former Mayor of Curitiba, Brazil

As I write this, the stream of world news is all from cities. In Dhaka, 1100 workers are killed by a collapsing factory: in Athens, demonstrations in Syntagma Square: in Rio, squatters are cleared from Olympic sites: in Beijing, a 7-day ‘urban smog episode’: in Detroit, the largest ever city bankruptcy: in outer Manchester and post-industrial Britain, ethnic conflict and ‘food banks’ for the hungry.

More than half the world population is now urban, by 2050 two thirds, and on current trends much of this growth will be in slums and informal settlements.¹ This is a massive challenge for planning, construction, investment and infrastructure. But the material city on the ground – a.k.a. settlement pattern, functional territory, city-region, metro-scape or urban system – is only the start. The city is also a ‘drama in time’, a hub or crossroads between global and local. Cities are in some ways like giant machines, and in some ways like biological ecosystems. But cities are also like collective human systems, of learning and thinking, creation and collaboration. So it seems we could learn ‘how to be a city’, and learn the art of city-making or city-growing: not only in physical design and construction, but for communities and livelihoods.

This all points towards some kind of City-III: a.k.a. Co-opolis, Urban 3.0, or synergistic city-region. City-III is a concept model, not a blueprint, but a direction of change and co-evolution, towards an open mind city of co-learning, co-creation and co-production.² And this isn’t just about abstract concepts – there are real prototypes and innovations, in neighbourhoods, housing, intelligent transport and others.

But first here are some principles for a City-III, and all the many systems of housing, transport and so on. The principles follow directly from the Toolkits in the previous chapter. The City-III is about ‘wider’ synergies which include all actors and all factors. Then it looks ‘deeper’, beyond materialist values, for synergies with social, cultural, ecological or ethical values. And then it looks ‘longer’, not just fixing today’s problems, but as part of a co-evolution and transformation. This co-evolution can be mapped out in three parallel modes. In the mode-I, the ‘clever’ city as a machine, housing and transport and services each have tangible functions, such as 5000 units of housing. In a mode-II evolutionary or ‘smart’ city, the entrepreneurs and innovators can flourish, in such as housing markets. And in the mode-III ‘wise’ City-III, housing or transport are part of larger synergistic systems, such as liveable communities or cultural co-creation. (See the summary table in the Annex).

¹ UN Habitat, 2004xxxx
In each of these, it seems that the physical dimension of spaces and places really matters – the details of house construction, the layout of street corners, or the spatial structure of a city-region – these can make the difference between syndromes and synergies of all kinds. (As a space activist, I find too many meeting rooms with chairs in straight rows, so I go around changing square layouts to circular, much better for co-learning and co-creation). So in this chapter, ‘space and place’ is at the centre of the picture, not as an end in itself, but as enabler for other domains, social or economic.

This chapter is the first of five, each with a similar format, from syndrome-mapping and change-mapping, through the main topics, and ending up with ‘pathways’. So here we first look at Neighbourhood-III, and Housing-III, and Retrofit-III. The centrepiece is the ‘Synergistic City-Region-III’, and the process needed of ‘civic design’. The final section explores cities in dynamic change, and pathways for both new development and regeneration. Each of these topics could be a very long story, but the main focus is on two simple questions:

- What would a synergistic, ‘wise’ City-III (or City-Region-III) look like, and how would it work?
- How to move towards it, via the ‘synergistic pathways from smart to wise’?
1) CITY-SYNDROMES

In the town hall down the road, you can find departments for housing, finance and environment: in the university up the road, there’s sociology, engineering and so on (I spend a lot of time cycling up and down this road...). But as soon as we look into real-life problems, for example the 2016 theme of ‘inclusive growth’, we find that many things are inter-connected. And if we try sketching the inter-connections on flipcharts or serviettes, we get something like the ‘City-Nexus’ at the top of Cities-Syndromes-(A).

Here, many things are connected to many things (but not everything to everything), and the most challenging problems are in the interactions, trading zones, and boundary effects between the circles. This, by the way, is the starting point of the ‘Bemine’, a major research program in Finland, which looks beyond the conventional landuse-transport-economy models, towards a real-world mapping of syndromes and synergies.3

A Low-Carb City, as in the previous chapter Toolkits, seems technically feasible and cost-effective with ‘deep retrofit’.4 The reality is more like a deep complexity of social, economic, ecological, political and cultural. But at present most urban models and urban policies work on linear techno-economic lines, and generally miss the bigger picture (and another catch is that techno-economic research gets the lion’s share of funding...). A Low Carb-City can at least agree on what is carbon, but urban regeneration is less straightforward. There are huge dilemmas where poor communities are displaced, public funding subsidizes the rich, urban heritage is lost, and new social divisions emerge.5 Urban regeneration is still framed by some as a ‘linear’ mode-I problem, with linear solutions such as, ‘build more floorspace’. Mode-II evolutionary thinking sees market failures and looks for incentives, but the result often widens the gaps and conflicts. A more synergistic and wise regeneration-III sees inter-connected problems, and looks for inter-connected responses (more on this in Cities-Pathways).

Similar qualities, of diversity, flexibility, inter-dependence and self-organization were mapped out by visionaries such as Patrick Geddes and Jane Jacobs.6 Now we can update to the 21st century, and explore the potential for a ‘wise’ open-mind City-III. But there are gaps, contradictions, and syndromes all around. Here are three of the most topical.

On the technology side, ‘Smart Cities’ bring together hi-tech with hi-finance, with the promise of low-carbon sustainability, with a $100 billion global market.7 What could possibly go wrong? As explored in Smart-Services-III, the digital transition has profound effects on management of large complex cities. But where the underlying system is basically machine-like or extractive, other things being equal, the technology tends to reinforce the linear and extractive. The same was found half a century ago, when ‘modernizing’ cities replaced public transit with highways and parking, finding

---

3 www.BeMine.fi
4 Boardman et al, 2006; New Climate Economy, xxxx
5 Raco & Lees, 2014
7 Schaffer & Komninos 2012
only with hindsight the scale of self-destruction and social fragmentation. So the challenge is to realize the aspirations for a wise city, to find ways to tame the digital tiger. Otherwise there’s a dystopian prospect of cities as ‘smart-but-stupefying’ machines for production, data extraction and digital domination. 

Ecological syndromes start with the word ‘resilience’. As in ADAPTATION-III, larger coastal cities, such as Dhaka, Lagos, Manila, New York or Tokyo, are especially vulnerable to climate and related hazards of storm, flood, sea-level rise or groundwater depletion. And it seems that disaster resilience can ignore the more endemic vulnerability to poverty or social stress of all kinds. London for instance has massive infrastructure for flood resilience but the Thames Path, about the most important walking route in the city, is partly privatized and gated off, a signal of the wider partitioning of society. The ‘100 Resilient Cities’ community of philanthropy, corporate, policy and science lobbies may be well intentioned but critical questions come up – resilient to what and for whom, and what if the wrong things are resilient (such as dictators and oligarchs)? RESILIENCE-III explores this further, here we just note the crucial contrast between ‘smart-but-stupefying resilient cities’ and ‘wise-resilient cities’. The recommendation of the experts is for ‘effective city government combined with cooperative multi-level governance’. This sounds rather familiar…. so how would it work?

Political syndromes start with the ‘right to the city’. As I write, 140 people in London face eviction: in the affluent UK ‘social cleansing’ is accelerated by the jungle of housing subsidies, welfare conditions, gentrification policies and the hollowing of local government. In developing countries the problem is huge and brutal, and around 1 billion ‘informal’ residents are at risk of eviction. Based on the ‘right to property’, investment in land and buildings is a vital second circuit of global capital accumulation and speculation. In contrast the ‘right to the city’ starts with the human principles of shelter and community. But there are hard questions: as growing cities attract people and investment, where demand exceeds supply, how should space be allocated? A mode-I social logic relies on allocation systems which are easily hijacked: while a ‘smart’ mode-II housing market apparently runs itself, but brings inequality and exclusion. This is put to the test by urban migration, the greatest movement of people in history, estimated at 3 million people per week. How can the ‘right to the city’ work for both existing residents and new arrivals?

---

8 Sennet xxx
9 Arup 2014: Ernstson et al, 2010
10 Revi et al 2014
12 UN Habitat 2007: Fernandes, 2007:
14 IOM 2015: Saunders 2010
Figure 4-1: CITIES-SYNDROMES

**CITIES-SYNDROMES**

**a) CITIES-NEXUS**
- **POLITICAL CITY:** distrust of leaders; local-regional dependency; public deficit & debt; public service gaps
- **CULTURAL CITY:** fragmentation & intolerance; identity gaps & expropriation; loneliness & alienation
- **ECONOMIC CITY:** Financialized house of cards; insecure branch-plant jobs, vulnerable to global swings, destroys local livelihoods

**URBAN DEVELOPMENT:** Fragmented peri-urban metro-scapes; inner-city shatter zones & suburban enclaves; growth / decline gaps

**SOCIAL CITY:** mental stress & dysfunction; addictive consumption; rising inequality / exclusion; welfare gaps & shortages

**TECHNOLOGY CITY:** Privatized infrastructure; smart city / hack-city mashups & digital disruption

**ECOLOGICAL CITY:** Resilience gaps; displacement of pollution & extraction; climate apocalypse

---

**b) CITIES-CYCLE OF CHANGE**

1. Activity & structure both aligned for new phase of growth
2. Combined urban growth phase
3. Restructuring & regeneration phase
4. Activity is rebuilt, redundant structures renewed

**URBAN STRUCTURE: BUILT & PHYSICAL RESOURCES**

---

**c) CITIES-SCENARIOS**

**GLOBAL COMMUNITY**
Larger compact cities & urban structures: advanced infrastructure & transport; universal housing

**GLOBAL ENTERPRISE**
Larger agglomeration / aerotropolis / commercial city patterns: high / low value housing gaps

**LOCAL COMMUNITY**
Smaller self-contained towns & villages: autonomous systems, reduced mobility

**LOCAL ENTERPRISE**
Dispersed settlement patterns, market forces, vulnerable to hazards

---


---

We could ‘take back control’ of our borders, but not our climate...
Change mapping

Many high-level reports on megatrends cover many urban issues... In 2015 around 3.9 billion people lived in urban areas across the globe; in three decades this could be around 6.4 billion, with developing countries containing nearly all the growth. We can also expect over 40 mega-cities of over 10 million, headed up by Tokyo and Delhi at 37 million each. If current trends continue, slums and/or informal settlements could cover half this urban world of shacks in a chaotic traffic filled sprawl. There’s also the Chinese model of hyper-urbanization on a high-rise industrial scale, lacking human spaces or amenities. The ‘Overdevelopment, Overpopulation, Overshoot’ project shows all this in graphic detail.

New urban types also emerge, such as the decentralized edge cities, the aerotropolis model of airport based business parks, or the carceral-enclave ‘post-metropolis’. Oil-rich development is booming in Dubai or Qatar, cities of transients and migrants, where hostile climates are overcome with limitless energy and materials. More widespread is where slums and informal settlements become legitimized, growing by stages into permanent urban structures, or bringing up radical new forms of urban community and shelter. The urban North is mostly slower growing, with a mix of peri-urbanization, suburbanization and re-urbanization, but in even in highly regulated Europe the peri-urban is becoming the main urban pattern.

These changes are often not in smooth trends, where some cities double in a decade, while others shrink. To explore this we can look at cities, not just as grey patches on the map, more like nodes or hubs of a system in flux. Some general patterns of growth and change show up in the ‘panarchy’ dynamic cycle, pictured as a ‘lazy-8’ in the middle layer of CITIES-SYNDROMES-(B). In the first growth phase, starting at the lower left corner, the industrial city burgeons and expands with factories and housing, until it approaches a second stage of climax and conservation status. Crisis comes in the third stage: markets change and industries close, and there’s a sudden mismatch between obsolete activities and buildings. Eventually the cycle comes around to a fourth stage, where redundant urban structures are cleared and a new kind of economic logic emerges alongside a new kind of urban structure. This kind of cycle is only an interpretation, as there are many intervening factors, but it can help to map hyper-growth cities such as Dubai or Shanghai, versus shrinking or re-structuring cities such as Detroit or Leipzig.

If we go around the dynamic cycle with a linear or extractive system, then the crisis is likely to be most destructive for the most vulnerable communities. In the UK the de-industrialization of the

---

16 UN, 2014
17 UN Habitat, 2004: Neuwirth, 2005
18 Butler, 2015
19 Soja, 2001: Kasarda and Lindsay, 2011
20 Krane, 2009: Ravetz, 2013
21 McGuirk radical cities
22 Gunderson & Holling 1992
23 Ravetz 2014: See www.shrinkingcities.com
1980s left empty buildings and spaces across the North and Midlands: the 2008 financial crisis left ghost towns across Ireland, Spain and the USA. In contrast, a co-evolutionary cycle, based on a mode-III open-mind model, manages change strategically, with a minimum of problems and maximum of opportunities. In this mode-III cycle the growth phase would be moderated and balanced: conservation would be flexible not rigid: the crisis would be anticipated for an orderly response: reconstruction would be inclusive and strategic. Some implications are explored in CITIES-PATHWAYS.

City-III is about spaces of possibilities, so we need some alternative scenarios in the background, for reality testing and ‘stress-testing’. One global project is the ‘Shared Socio-Economic Pathways’: this works out urban / rural ratios, in high / medium / low income countries, and calculates urbanization as fast / medium / slow.24 The results show likely urban populations of 60-90% of the world total, and a net urbanization rate in the region of 100 million per year. In City-III we take a more nuanced approach, focusing on qualitative structures and values, and there’s more on mode-III scenario methods in FORESIGHT-III. For the moment here are four scenarios for urbanization up to 2050, as modelled in the European peri-urban research:25

- ‘Global-Enterprise’ – with rapid economic growth, global population stabilizes, and rapid spread of digital, nano- and bio-technology transforms cities and lifestyles. In the urban South, urban development is privatized and focused on cities in the optimum 5-10 million range. This is surrounded by rapid peri-urbanisation and ‘metropol-ization’ of rural areas with smaller settlements, which contributes to social segregation. In the urban North older cities are retrofitted with hyper-smart systems which reinforce inclusion / exclusion.

- ‘Local-Enterprise’ – with a focus on self reliance, local-regional enterprise and preservation of local identities, population growth and technology innovation are slower. Cities and urban growth are more adhoc, deregulated and spontaneous: with widening gaps between affluent suburbs and the inner city melting pots. Meanwhile climate change impacts arrive in force, with major disruption to urban economies, lifestyles and infrastructure.

- ‘Global-Community’ – with democratic governments mostly in charge, urban development is highly planned and regulated: each mega-region has a clear urban hierarchy from global cities to local market towns. Location choices and urban structures are shaped by rising energy and resource prices, with a return to larger cities and towns with more social mixing and public services, while remote rural areas are mainly for leisure and tourism.

- ‘Local-Community’ – here there is a fragmentation of society into self-sustaining communities divided by generations, genders, ethnicity and lifestyles. Most cities disperse into smaller units, as social patterns are shaped by migration flows: generally younger migrants dominate city centres, older natives move to gated enclaves, and peri-urban areas become ‘peri-society’ landscapes, where each lifestyle group finds some kind of niche.

These scenarios are a colourful backdrop for our main task, to explore the open-mind City-III. For instance, a City-III in ‘Global-Community’ could benefit from well-organized government and urban

24 Jiang & O’Neill 2015
25 Piorr et al, 2011
structure, but there could be a struggle between creative enterprise and the internet-of-things surveillance. In contrast, a City-III in ‘Local-Enterprise’ would have space for co-innovation, but would struggle with governance or infrastructure gaps. Each scenario seems to contain contradictions and oppositions, and so any pathways need to be flexible and adaptable.

The next step is to look at the first role of any urban habitat, the neighbourhood and the housing within it.
2) NEIGHBOURHOOD-III

Scene: ‘Tomorrow’s New Communities’ awards, London 1991, hosted by HRH the Prince of Wales. (HRH) “this is a very attractive village scheme, and very ecological by the look of it. (JR) yes but our main aim here is to bring the land to the people, and the people to the land... houses are in clusters, each with a hectare from garden to semi-wild... (HRH) interesting... and would the people own the land or rent it? (JR) we’re looking at community land trust stewardship, lifetime equity, and mutualized public services... (HRH) how fascinating...

‘Local, liveable and sustainable communities’ – similar words go around in cities around the world. But we need to be careful what is ‘local’, in an age of migration and global networks, or what is ‘sustainable’ or ‘community’. These could be justifications for a city of wealthy eco-enclaves and the deserving poor. Even the sustainable city model of UN Habitat is critiqued as fixed and not suited to the problems and potentials of mass migration. So where to start?

For the physical conditions, the urban matrix, the classic ‘Jane Jacobs’ liveable city set out the pre-conditions: street level activities, front doors and gates, walkable pavements, public transit, diversity of routes, security by visibility in dense mixed-use neighbourhoods. But these spatial patterns aren’t ends in themselves, but to enable other values, in social, economic, cultural or political co-learning, co-creation and co-production. The implication is that a ‘sustainable’ neighbourhood can’t be planned or built as such, but maybe it can be helped to grow and emerge and self-organize. So we look for a diverse mix of social types, building types, location types, economic activities, transport modes and so on: much of this is covered in ‘sustainable urban neighbourhoods’, sustainable urbanism, and many variations. But there’s a crucial shift in focus for neighbourhood design and master-planning, from physical templates to social and economic cultivation (see CITIES-PATHWAYS).

However the neighbourhood is often a piece in a larger game. In Baltimore for example, newly privatized utilities raise their prices, so that poor customers build up debts at penalty rates, their debts are sold on, and the new hedge-fund owners then take legal action to repossess the properties for development with huge profit margins. Thus, ordinary workers put their earnings into a financial system which by its own logic then destroys their homes and communities. In the UK and Europe things are a little more subtle (London excepted), but in the urban South, often more direct and brutal. We return to the economic theme in LOCAL-ONOMICS-III.

26 Ravetz 1991
27 Aerni 2016
28 Jacobs 1965
29 Rudlin & Falk 1999
30 Al Waer and Illsley 2017
31 Hedge Clippers 2016
Figure 4-2: NEIGHBOURHOOD-III

NEIGHBOURHOOD-III

a) SYNDROMES: MODE-I&II

Mono-functional landuses: large plots; few local linkages
“deprived” housing project / estate on industrial scale
School / prison with security fence
Children & youth are unwelcome & unsafe
Everyone’s a stranger round here
Heavy traffic, noise pollution & risk in crossing roads

b) SYNERGISTICS: MODE-III

Multi-functional land-uses & many diverse local linkages
Housing renewed with human scale blocks & streets
New market place for small local traders
Crossroads is public space
Children & youth are welcome & safe

This neighbour- hood is ours!!

Human scale, biodiversity, street life, small enterprises, traffic calm

c) SYNDROMES: SOCIAL-SPACE-I&II

Spatial structure: mono-functional spaces, profit-centred, connected by roads & parking

Market housing
Retail
Green space
Enterprise
Roads & parking

Civic space
Services
Social housing

SOCIAL ACTORS
Community/person
Governance/citizens
Pub. service/users
Landowner/users

Younger / older: Male / female: Resident / income: Minority / majority: Richer / poorer

ECONOMIC ACTORS
Employer / worker
Owner / entrepreneur
Landlord / tenant
Services/customer

Social syndromes: divided; alienated, intolerant, exclusive, city of strangers

d) SYNERGISTICS: SOCIAL-SPACE-I&II

Spatial structure: multi-functional & responsive, for diverse linkages of people & activity

Market / social / coop / live-work housing
Enterprises & flexible space for new livelihoods
Multi-modal hubs / home-zone / walkcycle / civic space

Health / education / cultural hubs

CIVIL ACTORS
Diverse roles: street parties, car exchange, car shares

SOCIAL ACTORS
Many links: young/old, rich/poor, local / global

ECONOMIC ACTORS
Diverse enterprises: local shops, social business, mentoring & skill sharing


e) PATHWAYS

Economic pathway: social economy & community enterprise

Local service economy
Social/caring economy
Housing economy
Investment

... with wider & deeper financial values

Social pathway: mutual aid & resource mobilizing

Health circles & mentors
Space for co
Socialtech & innovation
accounting

... with wider & deeper public values

Ecological pathway: spaces for young, old, food, health,

Ecology-local enterprise
Ecology values
Ecology food

... with wider & deeper ecosystems values
So here we aim to build on the legacy and respond to new challenges, with a synergistic
neighbourhood-III. It should be clear this is not about cappuccino-style gentrification, more about a
neighbourhood model where diversity and self-organization in physical form, enables diversity and
self-organization in social, cultural, economic and ecological domains. This is where the notion of
open-mind co-learning and co-production comes in, and where micro-scale social and economic and
cultural entrepreneurs are at the centre. 32 Signs of neighbourhood open-minds turn up in many
places – inter-generational exchange, activities and events, economic recirculation, political activism,
informal encounter and multi-cultural conviviality. 33

With such aspirations on the table, the question is then how to get from here to there: what kind of
synergistic pathways can lead towards a wise urban neighbourhood-III?

There are many syndromes, as on the left of Neighbourhoods-IIIA, where the micro-trends don’t
show up in macro-urban data. For the UK, 1400 local pubs close every year, and only a quarter of
children now play in their street. 34 Especially in high growth centrally planned cities, Chinese cities
being the extreme case, there are large mono-functional plots, where local inter-connections and
exchanges are difficult. Residents are stuck in peripheral housing projects, heavy traffic and parking
fills the landscape, schools are prison-type blocks behind security fencing, and any children or youth
are unsafe and unwelcome on the streets. Further down the left of Neighbourhoods-III-C, the
spatial structures shows that housing, services, jobs and leisure are connected only by roads, where
basically more traffic leads to less community. 35 This reinforces a social structure which is more likely
to be fragmented, divided, intolerant and exclusive.

All this contrasts with the mode-III interconnections on the right of Neighbourhoods-IIIB:D: multi-
functional diversity of land-uses and land parcels, with multiple linkages between housing, jobs,
services, amenities. Urban renewal programmes reduce large monolithic housing blocks, and insert
human-scale street level housing. Traffic intersections are designed around pedestrians, through
traffic is re-directed, and children and youth are safe and welcome. The mapping below shows
multi-functional land-uses and responsive places, for enhanced social value, with inter-connections
of people and activities. There is ecological diversity, with orchards, arbours, ponds, school gardens,
health walks, allotments, guerrilla gardens and green zones: there are technical multi-use hubs such
as multi-modal interchanges, home-zones, walk-cycle routes, and civic activity space. There are
combined hub for health / care / education / culture: and on the high street, social enterprises,
popup centres, shared services and cultural livelihoods.

On the lower right, some typical social synergies show up, as collaborative, reciprocal, equitable,
inclusive, and fun... In a social domain there are mutual exchanges and reciprocities between young
/old, rich /poor, local / global: and in an economic domain, the youth can train in local enterprises,
services know their clients, landlords and investors know their tenants.

Manchester has around 20000 corner shops which are almost invisible in economic policy. 36 The
shopkeepers on my street for instance, know everyone by first name, give teenagers work

32 Hamdi, 2004
33 Valentine xxxx
34 Living Streets xxx
35 Traffic flow ref............
36 www.statistics.gov.uk
experience, help seniors do paperwork, and watch out for kids after school. This is not pure altruism but also business sense, as such linkages are more likely to bring loyal customers. But these irreplaceable hubs are easily displaced or destroyed by competition from supermarkets, over-rigid regulations, or distant landlords whose only interest is profit. So we have to look carefully at how to sustain them via the synergistic pathways.

An economic pathway starts with the money. For instance local taxes and property taxes (‘business rates’ in the UK), are often a heavy burden for small traders whose social role is unrecognized. A more synergistic tax system should include social benefits and costs, adjust for business profit and local investment, and offset with services provided (see LOCALONOMICS-III). More broadly, economic pathways look for opportunities in social and community enterprise in many shapes and forms. In low-income high-social-need areas, social enterprise for caring or exchange, or new enterprises which can draw on the community collateral, with creative micro-finance principles. In high-income low-need affluent suburbs, this is more about opportunities for social or cultural innovation.

A social value pathway works alongside the economic, with a focus more on mutual aid and mobilizing social resources. With health, education, social welfare, housing and green-space all under pressure from shrinking funds and rising need, we can mobilize the social creative energy and human resource, to add value to the individual and the neighbourhood. A third pathway is about physical and ecological design. For neighbourhood hubs we look for micro-urban design details, with locations on the school run, a forecourt where kids can chat, informal management of pavement parking and litter. Then we look for ecological spaces for the younger or older of different cultures and lifestyles, for local food, public well-health, community education or social enterprise.

In the background is the ‘death of the high street’ in the UK and similar countries, as out-of-town malls and online shopping take away customers from local shopping centres. This is about a sense of identity and belonging as much as shopping, and the traumas of those ‘left behind’ without livelihoods and prospects, or feeling pressure from migration where housing and local services are scarce. These aren’t simple problems or solutions. But a creative and lateral-thinking approach seems more viable than a linear replacement of shops. One example, the Borsig-11 project in Dortmund worked with local and migrant people to write their life stories each on one page, with the result of a unique artefact, a community book with 4000 pages. Such seeds of opportunity seem to emerge everywhere, with pop-up shops, swap-shops, stuff-libraries and fashion hubs, ‘give-boxes’, festival offices, and new social spaces for food, music and theatre. With a more synergistic approach to neighbourhood and community regeneration, we can reframe the ‘death’ of the high street as a potential ‘rebirth’ of a neighbourhood, the first place for ‘How to be a City’.

---

37 Portas Review, 2013
38 See http://www.borsig11.de
Every week around 3 million people seek a place in a city somewhere in the world. In London, migrants are half the population, and in Dubai over 90%. In the burgeoning cities of the South, there are widening gaps between urban migration and housing need, finance or infrastructure: wealthy enclaves sit uneasily alongside worker housing and informal settlements. The informal settlements – slums, bidonvilles, favelas, barriadas and so on – see a wealth of creative enterprise and mutual aid, but this comes with crime, corruption and lack of basic services. In the urban North, inflated land values and over-extended housing credit are at the core of a house-of-cards casino economy. The results are seen with empty housing in the UK rust-belts, half-finished ghost towns in Spain or Ireland, and ‘foreclosure’ zones of dereliction and homelessness in the USA.

The UK is one example from a much bigger picture. A linear model of housing growth suited the great suburban expansions and slum clearances of the 20th century, both public and private sector. In one year 300,000 public dwellings were built in the UK under a right wing government. But such rapid growth was not sustainable. Public housing struggled with design and technology failures, public finance and welfare problems, and an overload of social dependency. Meanwhile private housing was also rolled out on a mass production basis, vulnerable to market swings and financial crashes. The result is a dysfunctional mix of suburban or peri-urban sprawl, inner city dereliction with exclusion and segregation. At the same time the arduous process of assembling the land, permissions, finance, construction and public services, struggles to deliver units let alone liveable communities.

So, there’s a strong case for a more synergistic, wise housing-III. This would look ‘wider’ at how to bring together the many stakeholders. It would look ‘deeper’ at social and ecological values: and it would look longer, towards an intelligence-based system which can respond to complex needs. The crucial insight is the difference between mode-I housing as units: mode-II housing as markets: and a mode-III housing, more about liveable communities. The implication is that we need to design housing systems for all three levels. Could this work in practice?

Firstly, the syndromes of the UK housing crisis, with inter-connected problems at every level, national, city-region and local, as on the upper left of **Housing-III-(A)**. The macro-economy revolves around a pyramid of housing debt and ladder of rising value, which is periodically pumped up for political popularity, and also inflated by overseas property investors in London and the southeast. The UK government borrows £9.3bn per year for housing benefit (as of 2016), to subsidize tenants to enhance the profits of the landlords, who then also extract from rising capital values. A few giant house-builders now control the market with mass production, with the result that most new housing is highly unwelcome with strong opposition. While ‘place-making’ seems to be a lost art, urban

---

39 IOM, 2015  
40 Dharavi: Boo, 2012  
41 Ravetz A (housing)  
42 Shelter 2015  
planners have the unfortunate task of fending off market pressures with adversarial legal processes, in a complex pipeline of land, allocations, permissions and viabilities, which delivers only a fraction of the national housing need. At the local level we see promotions for ‘stunning and exclusive’ housing, which then proceeds to ‘stun and exclude’, as a bank vault and status symbol. Overall, most of these problems are systemic, but most policy solutions are simplistic...

These syndromes can be mapped out for market housing (owner-occupier and private rented), and social housing (public rental), as in the lower left part of Housing-III-(C&E). In each system the feedback channels seem rather sparse, and lacking the diversity and inter-connections of open-mind intelligence. In market housing the government subsidizes owners to take on loads from the private finance markets, which then fund developers, landowners and large building firms. There are few if any links to the community, local infrastructure, public services or the local building stock. As a result, many owner-occupied houses are inefficient and poorly maintained, and local facilities are underfunded.

Mapping of social housing shows a different kind of problem. The municipality or social landlord provider is often not well connected to residents or the community, who are also disconnected from builders, infrastructure or maintenance providers. A larger building stock might be managed better for maintenance and infrastructure, but vital links between providers and users are missing. As an ‘un-smart’ system this has little feedback or learning capacity, so that design faults go unreported, maintenance is short termist, and complex user needs are ignored.

Design of a more intelligent system starts with these gaps: it looks for wider synergies of stakeholders, and deeper synergies between domains. These are the components of the synergistic pathways, shown on the right of the mapping in Housing-III-(D&F). For market housing there’s a finance and construction loop, moving towards a community stakeholding model, with mutual funds and household collaterals such as inter-generational equity and lifetime bonds. Government should be more pro-active with the building stock, so that neighbourhoods with similar house types can gain economies of scale and coordination, as in Retrofit-III. Owner-occupiers should be networked for housing life-cycle management, so that repair / maintenance / rehab is less of a lottery, and more of a community-owned enterprise.

For social housing there are opportunities, to enhance the feedbacks and diversity in the system. Architects and urban designers should work closely with the community and with housing managers. Finance should work with builders and with infrastructure providers, and public services work closely with community groups and social enterprises. In both sectors there is a special role for community housing ‘mentors’, who can mobilize advise and coordinate residents on issues larger or smaller.

This also plays out at different levels, from national to local, as in the upper right of Housing-III-(B). There’s a macro-economic question of how to steer a self-inflating housing casino market into something more suitable for a crowded and under-housed nation. Housing finance needs to diversify and recirculate through a variety of channels, including mutual funds, co-housing cooperatives and hybrid tenures, supported by a progressive tax and fiscal reinvestment policy. And for a wider spread of housing equity, we should look at alternative financial models to the current free-market,

---

44 Arias, 1993
45 Ravetz 2008
where landowners, developers, builders, agents and house-buyers can each take longer-term equity stakes with incentives for reinvestment.

Another challenge is the pipeline of land, permissions, viabilities and constructions. Some planners already take the role of creative enablers, working alongside landowners and developers, social enterprises and public services, each as long-term equity partners. But the system at present is geared against them. Other possibilities are in community land trusts, cooperative land banks, community-mutual finance, sweat equity housing in many variations. New platforms such as AirbnB could shake up and provide new routes through a tangled market, for new as well as existing: and a more radical ‘lifetime bond’ scheme would cover lending for new buyers, backed by the assets of incumbents. Similar hybrids for rental-ownership or co-ownership could work for social housing, with built-in feedback between users and providers, with incentives for care and improvement, and a wider scope of neighbourhood services.

One question for the crowded UK calls for creative responses: how to shift housing as a ‘problem’ of unwanted development, to an ‘opportunity’ for creative community – in other words, a rediscovery of the art of ‘place-making’. NEIGHBOURHOOD-III showed that places aren’t ‘made’, so much as cultivated or nurtured, in a process of self-organization and co-evolution. So we need to look at co-evolution and how it works with ‘learning buildings’, ‘responsive places’, viable local economies, and ‘self-organizing’ communities. The social housing mix, for instance, would avoid mono-functional dwellings and areas, and aim for diverse live-work and dwelling-enterprise combinations, creative temporary DIY zones, and self-help inter-generational co-housing. Ecological diversity aims at the inter-connections of greenspace, wildlife, urban food and social enterprise. The whole urban matrix aims for patterns which enable and encourage improvisation. This builds on the legacy of the Garden Cities of Tomorrow, previously updated as a ‘Tomorrow’s New Community’ eco-village and then in the City-Region 2020. More recently the ‘Wolfson’ Garden City proposals gained national acclaim, but are stalled by the UK government’s refusal of the necessary legislation.

Similar directions show in many examples: the co-housing model in Nordic countries, the social forums of Mexico City, the Sustainable South Bronx of New York, experimental squatting in London, the Housing Company of Johannesburg, and the most creative and radical experiments now in Latin America. Each shows similar patterns – enhanced feedback for co-learning and co-production, in supply-demand-lifecycle value chains, which can link builders and designers, financiers and landlords, social-ecological entrepreneurs, and most of all the residents and their communities. These are the general principles of a HOUSING-III model: collaborative ownership / stewardship, customized for a diversity of users, with co-production of local services, within a diverse and self-organizing community.

---

46 Turnbull, 2007
47 Bentley et al 1987
48 Hollis, 2015:
Figure 4-3: HOUSING-III

A) SMART’ HOUSING-I&II: SYNDROMES

- Overseas investment in UK inflates prices
- Housing debt rules macro-economy
- Govt. borrows to subsidize owners
- Over-heating & disinvestment raise inequalities
- Owners/landlords extract rising values
- Builders do industrial mass housing
- Place-making is a lost art, new devt is unwelcome

CITY & REGION

Housing is a machine for living” (for robots):

COMMUNITY & DWELLING LEVEL

“Housing is a cash cow, fortress, status symbol

NATIONAL LEVEL

Look at that new housing...“Stunning & Excluded”!!

Yes we are Stunned & Excluded...

B) ‘WISE’ HOUSING-III: SYNERGISTICS

- Overseas investment is stabilized
- Hsg. finance recirculates via mutual funds, co-housing & combined tenures
- Landowners are partners in long term devt, with return of betterment
- Builders learn to customize
- New art of place-making: new devt is desirable
- “Housing is for humans” & liveable communities

C) MARKET HOUSING-I&II: SYNDROMES

低 collateral/high cost

Finance

Short term profit focus

Construction

Extractive model

Labour

Insecurity

D) MARKET HOUSING-III SYNERGIES

Shared equity & collateral

Finance

Long term equity share

Construction

Labour

Infrastructure

Integrated planning

E) SOCIAL HOUSING-I&II: SYNDROMES

Welfare shrinkage

Finance

Construction

Extractive model

Labour

Infrastructure

Disconnected

F) SOCIAL HOUSING-III: SYNERGIES

Shared equity

Finance

Construction

Labour

Infrastructure

Integrated planning

City-III CH.4 - CITIES v0.8 – 12-12-16
4) RETROFIT-III

All these synergistic housing schemes sound very positive – but the reality is almost the opposite, from Chinese hyper-urbanization, to North American gated enclaves, with a sclerotic UK somewhere in the middle. Meanwhile the global climate future depends on cities as hubs of energy and resources, which in turn depends on housing, and the dual challenge of new-build and retrofit. For new-build housing, the trend continues of waste of energy and resources, both physical and human. For retrofit, meaning half the global housing needed by 2050, in principle this should be not too difficult...

There are different angles on this. One is the energy-carbon metabolism as in **ONE-PLANET-CITY-III**. Another is physical housing, not just as a one-off construction, but as a life-cycle of maintenance, adaptation, cleaning, customizing and improvement. Another angle is retrofit, not only as physical process but linking with finance, business, governance and public services, and not least the community and the residents. This brings in the questions of social practice, how residents manage change and uncertainty, and how social or economic or policy institutions interact, or not.\(^{51}\)

In each country there’s a balance of population, housing supply and housing demand and/or need. In the UK, housing need increases at around 220,000 per year, while current new-build rates are less than half that, at 0.75% of the stock.\(^{52}\) (For commercial and industrial properties, not included here, there is a very different growth of 6% per year.\(^{53}\) ) Behind these averages, the country is divided into areas of over-heating and under-investment. The result is a slow-burning housing crisis, and with many constraints on new housing, the existing stock needs to prolong, adapt, rehabilitate and improve. Overall, the UK needs a national deep retrofit, covering in 25-30 years the entire building stock, a rate of around 1 million per year, far greater than current programs which (in 2016) have more or less come to a halt.

Low-carb retrofit can achieve cost-effective 60-80% energy efficiency, but this depends on coordination and strategy far beyond the current myopic policy.\(^{54}\) A synergistic retrofit programme would look ‘wider’ to coordinate all actors and all technical systems. It would look ‘deeper’, to link ecological benefits with economic and social and cultural. And it would look ‘longer’, from a mode-1 carbon counting mindset, to a mode-III transformation.

But first, ‘how not to do retrofit’: the UK Green Deal aimed to work with households and small businesses for efficiency improvements at zero or small up-front cost. The capital was granted where the repayments were less than the predicted energy savings, with the difference charged to the utility bills: the scheme was described as a “game-changer” and “massive economic and job opportunity”.\(^{55}\) In the event the Green Deal was an abject failure, with only 1% of the national plan achieved (with the exception of Manchester where 1300 houses were completed with the Low

---

51 Bouzarovski 2016  
53 CLG with ONS, 2008  
54 Boardman, 2006  
55 Guetler et al, 2011: Secretary of State Chris Huhne, 2011
Carbon Hub). And as as the political agenda now swings to cutting energy prices and (apparently) unpopular green taxes, the scheme has been suspended, with nothing to take its place (as of 2016). This all fits with the picture of syndromes and institutional gaps, on the left side of Retrofit-III-(A).

It’s worth tracking how this happened. It seems the government came in 2010 with a ‘year zero’ approach, a hasty termination of any previous schemes, and then the main agencies, the Energy Savings Trust and Carbon Trust, each suffered heavy cuts. On the home-owners’ side there were information gaps, distrust of privatized utilities and high finance charges of 7% per annum. The construction industry supplied a typically fragmented service with large upfront fees for ‘assessments’. On site, the retrofit was a piecemeal checklist, not well customized for the dwelling, so that actual energy savings were more costly and less effective. Is there a better way?

Some context is shown in the change mapping in the centre of Retrofit-III-(D). Housing may shift from a provider of space to a provider of services, as higher density and higher-technology dwellings become the norm in larger cities. We could anticipate a shift from ownership and straight rental, to flexible tenures, to suit a more mobile or transient or indebted population. The platform model pioneered by AirBnB is likely to spread to all kinds of accommodation for shorter or longer terms, with endless variations in joint equity, time-share, co-housing, real-time auction or self-build ‘tiny houses’ (see Smart-Services-III). Overall we could see housing, with fixtures and contents, shift towards a relational, experiential, flexible and networked role.

This suggests a wiser form of retrofit, sketched on the right of Retrofit-III-(E). Here the physical buildings are not isolated objects but inter-connected with ecology, finance, community, and policy domains. A digital platform as in Smart-Communities-III, (a combination of eBay / wikipedia / Facebook etc), provides the informatics for local coordination of blocks, streets, areas, utilities and micro-climate zones. Meanwhile the ‘human market-place’ of agents, social entrepreneurs and energy intermediaries, provides the face-to-face co-learning and co-creation. A network of low-carb intelligence and mentoring ensures that every dwelling is technically integrated, with energy supply, ventilation, heat storage, waste recycling, climate adaptation and transport all working together.

There are many possible pathways to achieve this, so these are typical examples from various UK climate change programs. A technical-professional pathway includes architects, engineers, surveyors, agents and others, to take roles as ‘housing mentors’ or ‘climate doctors’ who can advise recommend and coordinate. This needs a lead by government as under-writer, to engage with households in a strategic prospectus for improvement of each and every dwelling, where the likely cost savings can be invested up front.

In parallel is a ‘finance-infrastructure pathway’ which links the interests of finance (generally distant and hands-off), with utilities (direct contact with every household), with civic / community organizations (as trusted intermediaries), and with individual households (as net beneficiaries). This would put up both financial markets and parallel energy / carbon markets as incentives for savings and investment, on the principle of collective action (a.k.a. ‘I will if you will’). On similar lines to the Grameen micro-finance model, intermediary trust circles play a role as aggregators of demand,

56 Shrubsole et al xxxxx
57 Ravetz, 2008 (energy in housing)
58 IKEA,
59 Sustainable Development Commission, 2009
The finance is in the form of mutual community re-investment, with users involved at each step. This would extend the ESCO model (Energy Services Company) towards something like a ‘CASCO’ (‘Climate Service Company‘): a multi-functional coordination agency which balances investment for local savings and global benefits.

Thirdly, an ‘innovation-skills-procurement pathway’ looks for value-added between technology / innovation agencies, labour organizations, professional institutes and public agencies, with the incentives coming from large public sector contracts. This operates on a ‘strategic advance procurement’ basis, but it prioritizes not lowest cost but the highest value-added, including for technology innovation, economic development, human resources and of course low-carb savings. The government as provider of building regulations can be more intelligent to each dwelling or construction type, with constructions skills targeted to suit, this being the start of an intelligent open-mind integrated retrofit system.

The context is the physical reality of buildings, often adhoc and messy, with unresolved problems and questions. The UK post-war improvements to heating and sanitation are already obsolete, on a housing stock which is generally over-valued and under-maintained. And now domestic technology is much more complex, capital intensive and locked into system performance. Kitchen installations are elaborate combinations of style and technology, with endless variations for lighting appliances, exteriors, interiors, security, patios and gardens. Consumers seek new exotic links from indoors to outdoors, with conservatories, summer houses, gazebos and patios, which then they insist on heating (counter to all energy-efficiency advice). But there are intriguing possibilities around the corner.

One is the dwelling as a total ‘internet of things’: interactive video walls, biometric security, smart kitchens and appliances, energy-harvest furnishing and self-cleaning clothing. This holds out all the promise and likely contradictions of the ‘smart-but-stupefying’ city, as in SMART-SERVICES-III. Another is the house as a bio-mimicry climatic adaptation, continuously converting and extending, providing eco-niches and habitats, fresh water and air, and exotic indoor-outdoor environments. Another is the German passivhaus, circulating and cascading energy and materials on a zero-carbon /zero-waste basis. Such aspirations look impressive in catalogues and show-houses, but reality starts with the average building in the average city, with average semi-chaos around it. For progress we have to rethink the building as a ‘collaborative artefact’, for which the designers / builders / engineers / owners / tenants / landlords / intermediaries are joint stewards...

---

60 Yunus 2012
61 Energy Saving Trust, 2006
62 Hand and Shove 2004
63 RAE 2013
64 Pawlyn 2011
Figure 4-4: RETROFIT-III

a) SYNDROMES: ‘SMART’ RETROFIT-I&II

- Housing & other buildings are disconnected financial objects
- Apartments have split incentive barriers to improvements
- Houses disconnected from neighbours
- Waste is sent to landfill

Intensive consumption, fast cars & long haul flights

b) SYNERGISTICS: ‘WISE’ RETROFIT-III

- Physical buildings are linked with other value systems - ecology, finance, social, policy, technology
  A digital ‘platform’ (eBay / wiki / Amazon / FB etc, provides big data & informatic intelligence

A human ‘market-place’ (agents / entrepreneurs / intermediaries / creatives) provides the synergistics

Integrated energy supply / demand, ventilation, storage, cascade, recycling

Let’s rethink our way of life

c) SYNDROMES

(Thin lines show typical exchange; dashed lines show typical barriers)

(d) CHANGE MAPPING

from functional to relational buildings
from fixed to flexible tenures

from space to service centres

Finer details:

media & public sceptics
Social & civil society
Construction
Labour & skills

Innovations:

‘Year zero’ policy
Unstable & unfunded Public housing
Public services
Private housing

h) PATHWAYS

Financing gaps: asymmetric info & distrust: high profit margins & viability hurdles

Innovation gaps: Inertia & uncertainty: low investment in technology, plant, skills:

Institutional gaps: Split incentives & trust barriers

‘Finance pathway’: links owners, agents, utilities, builders via integrated mutual-type ‘finance hub’

‘Innovation pathway’: Technical skills, regulation, procurement hubs

‘Institutional pathway’: new tenure & stewardship models & agency hubs
So far we gathered the components, of neighborhoods, housing and retrofit. The next question is how they fit together in the larger spaces and places of a city – or – an integrated ‘city-region’.

Manchester shows a city-region in space and time. Early textile industries colonized the river valleys through the 18th century, at the intersection of materials and energy and transport. Rapid innovation was encouraged by non-conformist religion, with its culture of independent thinking and technical education. Now the same towns and villages are recovering from post-industrial shakeout, with promotions as desirable areas for urban professionals. Business and science parks, ‘horsi-culture’ and conference centres, now locate in proximity to motorways and airports. In the surrounding landscape, a deracinated mix of older decline and newer growth, idealistic eco-restoration programs put down new roots. Sprawling industrial towns show the layers of 19th century workers housing, 20th century estates, and standardized British suburbs. Central Manchester is booming as the UK’s second city, but is surrounded by a many-layered city-region, with communities broadly divided into connected and disconnected.

Manchester is a partial success story, but elsewhere in the UK there’s a long list of spatialized problems: growth and overheating, decline and obsolescence, and a rather British kind of semi-planned sprawl. Other parts of Europe see more extensive sprawl, while in the USA, unrestricted auto-dependent expansion, in suburbs and ex-urbs, surrounds fractured and troubled cities. In China and other centralized countries, expansion is in the form of mass housing with little regard to neighbourhood structure or human scale. Elsewhere there’s huge variety in cities: dynamic aerotropolis cities, tourist strips in Malaga or Cancun, migrant cities such as Dubai, global industrial zones such as Shenzen, peri-urban edge cities in Atlanta, and trading hubs such as Singapore. There are just as many older city types: migrant camps, oil or mineral towns, planned cities, university cities, factory cities, and the ubiquitous informal slums or barrios or favelas, large and small. And over-arching all are the megacities of 20 or 30 million, with every imaginable combination of the above: some are more or less manageable, many are seriously out-of-control, where urban planning is more like crisis management than strategy.

Within built-up areas, we can look for spatial types and ‘regimes’ which emerge in different locations, each with its dynamics of growth and change. Many suburban areas appear stable, with solid housing and manageable communities, but underneath, vulnerable to economic change or housing bubbles. We can also look for unstable regimes or those in rapid flux. Many inner city
areas are ‘shatter zones’, where former communities are under pressure from financial forces, or new infrastructure, or simple dispossession. In London, Spitalfields was a historic migrant quarter with multi-cultural streets and small enterprises, but now it faces directly the advancing blocks of a global financial centre. London also sees gentrification and an insidious ‘market cleansing’, where social housing is appropriated back into the private sector, where rents and values then multiply up. 72 Elsewhere in the UK, many urban areas show residues of broken industries, crumbling housing, obsolete space and hollowed-out public services. While every city is a container for competition and conflict of some kind, in these zones there is displacement and wastage on a massive scale: either we accept this as just ‘creative destruction’: or we look for a more synergistic way forward.

Growth is the crucial question here. In simple terms, the logic of linear growth in the industrial city was about physical resources, production, energy, water and transport. Growth in the post-industrial city is more evolutionary, with a diversity of human ecosystems and niches for global networks, local clusters and specialized functions. The traditional layers of city structure are first turned inside out by auto-mobility, where development moves to the outer ring: then they are turned upside-down by network connectivity, where development is freed from physical proximity. An airport lounge is more connected with other lounges around the world, than with the slum settlement down the road.

So behind the simple word ‘growth’ there are different things going on (also see CITIES-PATHWAYS and PROSPERITY-GROWTH-III). While planners and engineers aim for simple growth in housing units and road capacity, or containment of such growth, societal needs are often far more complex. In principle, complex problems call for complex responses, as in Ashby’s ‘law of requisite variety’. 73 In practice, most governance or market systems are simplistic and mono-functional, or at best, competitive and bi-functional. While linear mode-I type problems can be addressed with mode-I solutions, complex synergistic mode-III problems call for mode-III responses. While policy plans for 5000 units, or developers plan for shareholder value, people aspire to liveable communities.

Here the synergistic open-mind framework is very useful. We can look for ‘wider’ synergies between landuses and locations, and between all stakeholders involved. We can look for ‘deeper’ synergies between the different domains, social, technological, economic or environmental. And we can look for ‘longer’ synergies, between shorter-term linear change, and longer-term co-evolution. The lower half of CITY-REGION-III shows the contrast, with a typical mode-1 linear urban growth on the left: an evolutionary mode-II in the centre: and a synergistic mode-III transformation on the right. How would this work in practice?

72 Raco and Lees 2014
73 Ashby, 1956
Figure 4-5: CITY-REGION-III

a) LINEAR CITY-REGION-I
Population growth & Urban mobility, water & housing growth
Industrial & port growth
Older merchant district
Commercial business growth & specialization
Urban fringe horticulture

b) ‘SMART’ CITY-REGION-II
High value ‘enclave’ housing
Low value ‘land-fill’ housing
Suburban regime
Industrial ecology innovation hubs
Retail / transport hubs
Ecological balances & cycles at city-region & local scale

CITY-REGION-III

Population growth & Urban mobility, water & energy demand
New green hubs for living / working communities
Eco-belt land-use & resource exchange
Exchange links for visitors / residents
Rural networked economies

b) ‘SMART’ CITY-REGION-II
Industrial / logistic hubs
Socio-cultural flux
Derelict land / neighbourhoods

CITY-REGION-III

Linear growth & geographies of proximity
Housing Civic Resources
Industry Transport
Built area
Functional Urban Area
Rural-Urban Region

TYPOLGY

Structures & Dynamics:
Direct population growth & economic growth >> rapid linear expansion of industry, housing, transport / water / energy, civics, services

Structures & Dynamics:
spatial structure grows: extractive power grows: sprawl, pollution, waste & obsolescence grow.
Complex expansion into multi-layered agglomerations

City-Region connectivity for humans & ecosystems
Peri-urban economic & social exchange

Co-evolutionary growth:
Geographies of synergistics

Space-extensive sprawl growth
Orbital route connects new activity hubs

High-value / desirable zones
Low-value / undesirable zones
Urban area hollowed out

Regional Co-evolutionary links:
Urban / suburban / peri-urban / rural / global / local
Business / infrastructure: global network & function
Settlement / service centres relations: function & proximity
Ecological / QOL relations: proximity & connectivity

Multi-functional, diverse, inter-connecting of growth / decline: urban / peri-urban / rural

Structures & Dynamics: Geographies of connectivity

City-Region connectivity for humans & ecosystems
Peri-urban economic & social exchange

Co-evolutionary growth:
Geographies of synergistics

Space-extensive sprawl growth
Orbital route connects new activity hubs

High-value / desirable zones
Low-value / undesirable zones
Urban area hollowed out

Combined synergistic links:
Urban / suburban / peri-urban / rural / global / local
City-regions in co-evolution

The idea of a spatial pattern with social, economic and ecological systems in harmony, emerged a century ago with Howard’s Garden Cities of Tomorrow. And the notion of whole city-regions with their hinterlands in space and through time, came soon after with Geddes’ Cities in Evolution. But as urban planning grew out of architecture, and rural planning from agricultural science, and regional planning from economic geography, different branches ended up in silos. The UK saw many attempts to rearrange local government into more effective city-region units, but it was never easy to agree on the boundaries (and confusion continues with the current patchwork of ‘Local Enterprise Partnerships’).

Looking at the evolutionary spectrum, the typical industrial city shows a linear mode-I material-functional logic, on the lower left of City-region-III-(D). The population grows, economic production grows, infrastructure grows, and the urban land-take also grows. The result on the ground depends on geography, infrastructure, building types and social practices. This is the general frame for most regional analysis and landuse-transport modelling, based on the mathematics of spatial interactions and optimized locations. This can work well in a stable system, where industries and governance and infrastructure are all more or less in alignment. But a more realistic picture comes with the mode-II ‘complex adaptive’ or evolutionary model, shown in the lower centre. Here, urban expansion generates entrepreneurial opportunities, creative destruction, innovation in niches and regimes, and emergent spatial relationships. This mode-II is now accepted thinking in regional economics and innovation studies, and researchers try to simulate the complexity ‘agents’ with cellular automata. But the challenges get bigger with the effects of urban agglomeration, where the spatial unit of analysis moves beyond that of a free-standing city to a more complex pattern. There isn’t yet any clear way to analyse or model peri-urban sprawl, with its extended spaces of flows, the ‘post-metropolis’ of ‘carceral’ cities and ‘archipelago’ of enclaves.

Within the city-region, many evolutionary type interactions also emerge. New links and exchanges form between rural to urban, rural to peri-urban, peri-urban to urban, and so on. A river floodplain might become a golf course and country park, which attracts new housing, which then attracts garden centres and horse-riding. This is the logic of the (now fashionable) ‘ecosystem services’, where the hinterland provides water and energy, along with ‘amenity’ and ‘cultural’ services for urban or peri-urban populations (see Ecologies-Syndromes). Urban centres provide higher level economic services to peri-urban residents (who try to avoid paying for them): rural areas provide tourism playgrounds to peri-urban residents, (who try to exclude poorer urbanites): and peri-urban areas provide garden centres and retail parks for the city (which then complains about sprawl). And so on, all of which raises huge challenges for governance, as in Multi-level-III.

---
74 Howard 1901
75 Geddes, 1915: Welter, 2003
76 UCL book: Maud report:
77 Batty 2014: Bettencourt, 2013
78 Soja, 2001 & 2005
At larger scales, there are structural evolutionary forces, again as in City-Region-III-(B&E). Cities and peri-urban hinterlands segregate into ‘sunrise’ zones for ‘cultural-cognitive-capitalist’ creatives, and ‘sunset’ zones of dependency and peripherality. Connected communities seek residential location with quality-of-life in ‘exclusive’ developments: disconnected communities are left with public subsidies in ‘human landfill’ peripheral housing projects, polluted by industry and infrastructure. Alongside there’s resistance and deviance and scarcity of every kind: derelict and half-obsolete spaces in the urban fringe, under the highway or next to the sewage works, are home to rave parties and scrap-yards, squatters and activists, grey or black economies, utopians and subcultures of many kinds.

Meanwhile the bigger question is how to avoid sprawl and polarization, and move towards prosperous, inclusive, resilient and sustainable communities? This points beyond the linear logic of governance, and beyond the evolutionary logic of markets. It points towards a more ‘wise’, Synergistic City-Region-III. Again, this isn’t just a design template or checklist of policies. It’s more about nurturing the ‘spatial synergies’, and spatial dimension of a collective intelligence, for urban housing, transport, infrastructure and so on. In other words, a synergistic City-Region-III is a spatial patterning, which enables and encourages synergistic housing, transport and so on.

An image comes to mind – three kitchens, each with the same space, same equipment and same amount of food. A mode-I kitchen is for basic industrial cooking, and mode-II is a typical shared kitchen where no-one cleans up. Mode-III is a well-kept kitchen at the heart of the household, where one can make beautiful food....

And for the ‘well-kept’ Synergistic City-Region, on the lower right of City-Region-III-(F), it seems there is more than one kind of spatial synergy. At the bottom are the spatial synergies of ecological / liveability, where the main spatial logic is about ‘connectivity’. In other words the networks rivers, ecosystems, green-space, and walking / cycling depend on being connected and unbroken. In the centre is the system of residential areas and service centres, where the spatial synergy is more about physical proximity. This shows a kind of fractal pattern, an updated hexagonal Garden City diagram: but now there is not one system of centres / sub-centres / sub-sub-centres, but several. There’s an overlapping hierarchy of functions and proximities, from local to regional, so that any location might be in three or four overlapping gravity fields (this also reflects the ‘3 Fabrics’ of cars / transit / pedestrian, in the next section). Above that is a different kind of spatial synergy for business and infrastructure, more about global networks of function and suitability. A science campus or logistics depot, for instance, needs suitable local conditions, but its main role is in global networks of knowledge or trade, and so could locate here or there in the city-region.

The main point is that each of these layers has a different kind of spatial synergy. The much promoted Sustainable City (or City-Region) model, with variations in compact cities, edible cities and so on, puts priority on the proximity principle. The Synergistic City-Region is about the combinations of these layers – proximity, connectivity, network – and the diagram starts to look like a tapestry, at the top of City-Region-III-(F).

---

79 Scott, 2000 and Scott, 2006
80 Davis, 2006
81 Shoard, 1983: Edgelands REF
This all suggests a new concept – spatial synergistics. And in the search for spatial patterns which promote synergistic housing or transport etc, this draws on general systems principles. One is about diversity and multi-functionality, in landuses, activities or infrastructures. Another is about reciprocity and recirculation, as in urban-rural linkages, regeneration programmes, or high-value urban developments. A third is the principle of open-mind space and resource: to allow for co-creation, co-innovation and co-production, the City-Region-III needs very practical things. It needs spare buildings, land parcels large and small, multi-functional uses, financial headroom from property tax, loose-fit infrastructure connections. So – as it turns out – the creative warehouse quarter is a priority, even though the gentrification effect means that cultural entrepreneurs have to keep moving on.

And this open-mind space and resource – this isn’t just about space and structure, but about the thinking behind it. In a mode-III kitchen, there’s the polished surfaces and well-managed cupboards – but behind these are social things, of co-learning and co-creation of social practices, cultural norms and discourses, and some kind of collective intelligence (summed up as ‘I will if you will’).\textsuperscript{82} Put it another way, the Synergistic City-Region-III is the most practical way (perhaps the only way) to realize a Sustainable City-Region.

The graphic on the upper right of City-Region-III-(B) shows where this is heading. A multi-level network of green-space and green-blue-infrastructure covers the city-region, so that all locations are accessible to both humans and biodiversity. The centre and CBD is open and inclusive and multi-functional. Local centres diversify, so that if shopping declines for whatever reason there is flexibility for other uses. Housing areas contain live-work-shop accommodation, multiple and hybrid housing tenures, multi-generational exchanges, co-housing and cooperatives for younger and older groups, traffic-free home-zones and local social-ecological enterprise. Urban ‘shatter zones’ of change or conflict are managed so that vulnerable communities can cope with decline and restructuring. Larger scale new development or regeneration is based on mutual forms of finance and collateral, linked with local labour markets and ecological assets.\textsuperscript{83}

All this is achieved, not by fixed masterplan or zoning, more by a synergistic process of co-learning and co-creation. As in the next section, Civic-Design-III, the process calls up new roles for everyone involved. Planners can be facilitators, architects like sociologists, developers like eco-entrepreneurs, and residents can be grass-roots financiers.\textsuperscript{84} Creative and practical opportunities emerge by spatial synergy: house-builders can provide local features for mobile professionals: regional businesses can access social enterprises: globalized shopping can be linked to local skills and products.

Let’s now see how the Synergistic City-Region-III works for two crucial questions: urban accessibility / transport, and the peri-urban hinterland.

\textsuperscript{82} SDC 2009
\textsuperscript{83} Rudlin & Falk 2014
\textsuperscript{84} Bauman, 2006
Accessibility & transport

The history of urban transport is a classic story of linear thinking. Planners and engineers see growing demand for roads and parking, and supply more roads and more parking, while dismantling transit systems and ‘paving paradise’. The physical limits to this process emerged in the UK in 1966, but the lessons took decades to filter through, by which time many cities and towns had been turned inside-out by road schemes. Most new roads served only part of a rising demand, and so both improved and unimproved cities were choked with congestion, as their changing social and economic life clashed with their physical legacy. In contrast, the outer parts of older cities, and the whole system of newer cities, were organized around the automobile and the highway, in a powerful ‘adaptive-extractive’ model. It’s adaptive in the sense that the automobile system can generate feedback and innovation, so if one road is blocked drivers will quickly find a way round, (in contrast to rail systems), and businesses will quickly relocate. It’s ‘extractive’ of energy, carbon, steel and concrete, and also of social life: residents overlooking a fast highway have little interaction compared to those on a quiet residential street.

The result is seen with an extractive model of automobile dependency, sketched on the middle left of CITY-REGION-III-(B). This shows a space extensive society, where walking areas are isolated enclaves, transit systems are under-funded and uncoordinated, and automobile systems dominate the city. Urban space expands to mono-functional sprawl: ‘fast logic’ generates ‘auto-area-mobility’, and mono-functional nodes expand at road interchanges. The liveability is now about access to parking, and (with wonderful irony), the largest pedestrian areas are now in the hyper-malls and airport terminals. This shows how the ‘smart transport’ agenda can be very ‘clever’, but not so ‘wise’: as discussed in SMART-SERVICES-III, increasing technical efficiency (ceterus paribus) is likely to increase automobile dependency.

As for a synergistic alternative, this starts with accessibility-transport-landuse relationships. The landmark concept of ‘automobile dependency’ came from charting transport energy against urban density. This shows a huge spectrum, from Hong Kong at 300 persons per hectare (pph), to Atlanta or Phoenix with just 6pph. More recently the ‘Urban Fabrics’ method has worked on three land-use-transport types:

- ‘Walking city’: population densities of over 100pph (persons per hectare): generally up to a 2km radius from the city centre or other transit hub.
- ‘Transit city’: densities in the region of 50pph, and a typical 8km radius from the city centre.
- ‘Automobile city’: densities of less than 20 pph, often spread out across large areas.

The Urban Fabrics method is now a prototype in Finland, a country with low density and rapid urban growth. Digital maps of the Fabrics, existing and planned in every municipality, are put on a common platform, with a process of deliberation, negotiation and capacity building, at local, regional and national scale. Now in progress is a synergistic research, on how the syndromes of

85 “... they paved paradise and put up a parking lot”... in the words of Joni Mitchell (1971)
86 Buchanan 1966 xxxxxx
87 Rapoport, 1977... Living Streets
88 Newman & Kenworthy, 2001
89 Newman et al 2015
90 Kosonen & Ristimaki 2015: see http://bemine.fi/
sprawl and agglomeration and ‘governmental ambiguity’ fit with the 3-fabric model. Some overarching questions come up – is there an ideal pattern to aim for, how to plan a transport system around this, and how to renew or reinvent local government for this task?

The other side of this table is the transport system itself, at a time when many cities in South and North are literally choking on their vehicle exhausts. But there are huge opportunities emerging, for responsive, integrated chain, value-adding digital platforms which link supply and demand and activity and lifestyle. Some further thoughts are sketched in SMART-WISE-SERVICES-III.

**Peri-urban-III**

Transport enables locations in space and place, and the first effect is urban expansion or urban sprawl. Given the choice, a typical firm would locate in a peri-urban location, serving a larger labour market or retail market from several urban areas, with the bonus of a cleaner greener image, all suitable for high-value or high-spending mobile professionals.

It seems the peri-urban is the pressure valve, the litmus paper which signals the health of its surroundings. It’s also a new kind of non-city, where previous assumptions on urban analysis and urban policy don’t seem to work. This all came up in the largest ever peri-urban research, the EU-funded PLUREL, a brave attempt to bring together many kinds of knowledge. The analysis and modeling found that European development is now spreading sideways, with peri-urban growth between 1.4-2.5% per annum, and if these irreversible trends continue, Europe’s cities will be mainly peri-cities within a few decades.  

The default for peri-urban development is urban sprawl, with low densities, wasted land, car dependency, and disconnected services and communities. But in looking for sprawl, questions come up: which scale or spatial unit is to be counted? Is an airport or business park sprawl or development? A technical definition looks for eight factors: ‘density, continuity, concentration, clustering, centrality, nuclearity, mixed uses, and proximity’. But alternative views of the same landscape can find new forms of ‘edge cities’, ‘metro-scapes’, or leisure centres and eco-communities. There are problems everywhere, of sprawl, congestion, rural change, loss of farmland and biodiversity, hollowing of cities. But the chances of policy and regulation holding this back seem small, in most countries, and there are huge challenges as in MULTI-LEVEL-III or ADAPTATION-III. This suggests an entrepreneurial approach should look for opportunities in new kinds of urban pattern, as in FOOD-III, RESILIENCE-III and others.

The UK Green Belt or equivalents elsewhere, is about the best so far of any peri-urban policy. But in practice it’s not always green, and there are many gaps and negative effects. Proposals come up for a more synergistic, inter-connected and resilient kind of Green Belt, a kind of ‘Eco-belt’, of which wonderful examples can be seen. But to scale up from one-off prototypes to the mainstream,
needs a more fundamental approach. So, a Green-Belt-III model would look for self-organization, diversity and multi-functionality, along the lines of the ‘spatial synergistics’ above. A Green-Belt-III sees multi-functional and temporary uses in diverse small areas, rather than mono-functional large parcels, with collaborative financial structures and participative governance. Its ecological strategy opens up public access with nature networks and corridors, linked to local farming with aquaculture and horticulture. A Green-Belt-III housing strategy aims towards slow-growing village forms, with mutual ownership, clustered around local services and resources, (instead of mono-functional profit-driven housing estates). It would keep strong legal defences against speculators and predatory capitalists, mainly by reinforcing the local collateral. Its public services aim at decentralized and networked systems of health, education and social care. Examples of such peri-urban experiments are found all over, from Canada, Europe, Thailand and Australia.\footnote{Greenbelt Foundation: Piorr et al 2011: Low Choy xxx}

Overall, the aim is to re-direct urban expansion and peri-urbanization sprawl away from uncoordinated mono-culture, towards the growth areas in a more diverse, multi-functional, resilient and synergistic City-Region-III.\footnote{Howard, 1898: Ravetz, 2000: Hall 2014} In other words, the solution to the peri-urban problem isn’t all in the peri-urban, it’s more a whole city-region issue. Many attempts are made on city-region strategy, some more successful than others, as the issues of governance, public finance, civic-design and infrastructure are huge and complex. The most common syndrome is where governance structures are unsuited or disconnected from the reality on the ground, and so the synergistic \textit{Multi-Level-III} governance could contribute here. Again, this is way beyond a normal blueprint or policy checklist, more like an open-mind process of co-creation and co-production with all involved.
6) CIVIC-DESIGN-III

Question – what’s the difference between a place with surface glitz, and one which brings people together, enables enterprise, feeds the imagination and matures with age? This is a long running theme in architectural or urban design, which now we can update as a synergistic design agenda. Of course, it’s rarely as simple as asking ‘the community’, in an age of mobility and transience and migration. But we could and should be more aware of the inter-connections: between spaces / places / buildings, and people / communities / networks / cultures. So, just as a well-worn adaptable ‘learning’ building seems to grow with its users – so our cities and places and spaces can be more about learning, human scale, culturally vibrant and ecologically ‘regenerative’. 97

For my part, I worked in the late 1970s as an urban activist and builder, and the 1980s as a community architect and planner. I arrived in London to find residential neighbourhoods emptied and destroyed by property developers, whose office blocks were then kept empty for higher capital value in a rising market. 98 The inner-city squatting communities were sustainability experiments and living laboratories, a decade or two before these words emerged. Later in northern England, my practice went into officially ‘deprived areas’, near-war zones with burned-out cars and broken windows. It seemed that architects would aim to parachute in, generate a project, then exit with the fees. With methods based on the ‘Pattern Language’ and ‘Planning for Real’, 99 I found myself talking with residents, as to how and why such division and alienation happened – between the old versus young, locals versus incomers, Protestants versus Catholics, Hindu versus Muslim, or taxpayers versus welfare users. Maybe the most powerful division has now come back full circle in the Brexit of 2016: between the disconnected ‘people’ and the connected ‘elites’ who run the system. It seemed that only when such divisions and conflicts – social, economic, cultural, political – were mediated (if not solved), and possible synergies were explored, then a physical design could benefit the whole community.

Through this, the assumptions behind the Pattern Language also surfaced – that community-based design should enable social cohesion, and that if the buildings are diverse, responsive, human scale and adaptable, then social or economic systems would follow. This is the perennial proposition from architects and planners for ‘good design’. 100 But my experience showed that ‘good design’ seemed to be more about socio-business models, property or land tenures, and political institutions. If the main reason for development is to extract profit, then any physical delights will probably be superficial and short term. But if the financial model and the land / property collateral is more connected, as in Finance-III, with social and ecological values built in, then any physical design is more likely to benefit the whole community.

98 Booker & Gray ??
99 Gibson, xxxx: Alexander 1977
100 Farrell, 2014
Meanwhile a national movement emerged in the early 1980s (with unexpected endorsement from HRH the Prince of Wales), for community architecture, planning and development.\textsuperscript{101} The RIBA Community Architecture Group ran a national scheme (with myself as northern coordinator), offering subsidies to community groups for feasibility studies, which could then unlock major capital funding for sites and buildings.\textsuperscript{102} But as the process became more professionalized, it seemed more strategic to look beyond one-off projects. The 1980s industrial shakeout and property boom, saw structural conflicts between communities, planning authorities, landowners and developers, with at best stalemate, and at worst wholesale destruction of communities. Meanwhile ‘consultation’ and ‘participation’ were now required on master-plans and regeneration schemes, but this was often misunderstood and misused.

A so-called ‘Community Development Charter’ emerged, a protocol or code of practice, for collaboration and co-creation by government, developers, the professions, NGOs and communities at large. At the core was a ‘relational’ view of all the stakeholders in a development, masterplan or regeneration project, for mediation and collaboration around a notional table. Similar ideas emerged from private developers, such as ‘Managing Urban Change’, and others from the Garden City tradition in ‘Tomorrow’s New Communities’.\textsuperscript{103} In the event, the financial / property crises of 1990-91 put everything on hold, and then in 1992 a much broader concept changed everything – ‘sustainable development’.

These fore-runners of synergistic thinking, pointed to how actors around a table, real or virtual, could link physical design with socio-economic change. The round table view of a relational ‘ecosystem’, as in \textit{Civic-Design-III-(E&F)}, brings insights on community participation, from a linear mode-I ‘tokenism’, to a mode-II ‘manipulation’, to mode-III empowerment, as on Arnstein’s ladder of participation.\textsuperscript{104} In practice the actors / stakeholders are not equal partners, and often not around the same table. This raises the question of ‘who’ is self-organizing, and what is their agenda? Spatial planning is one of the front-lines for a pro-active participatory democracy, but it’s often problematic, where decisions or agendas are managed from behind, or steered by the elite. Often there is confusion and ambiguity, (see \textit{Foresight-III}), whether the issue is mode-I type questions of local housing numbers, or a mode-III transformation of the housing system.

There isn’t a simple blueprint for such asymmetric, power-driven, politicized negotiations. We have to look beyond ‘relational planning’, towards a ‘relational-emergent’ planning, which turns contradiction / conflict into opportunity.\textsuperscript{105} And contradictions / conflicts are all around: residents compete for space and connectivity at home or work or leisure: private property rights are challenged in a fluid democracy, and tension rises over roads, airports, energy or water sources.\textsuperscript{106} Behind these are system mismatches and paradigm shifts. There’s a mode-I government of ‘space’ (for numbers of houses or roads): and a mode-II governance of ‘place’ (housing markets and incentives). There’s also a mode-III enabling of ‘liveable communities / prosperous economies’ – the

\begin{itemize}
\item \textsuperscript{101} Wates and Knevitt, 1979: Wates 2013
\item \textsuperscript{102} Ravetz, 1995
\item \textsuperscript{103} Lipton et al, 1993: Ravetz 1991
\item \textsuperscript{104} Arnstein, 1969: Ravetz, 1999
\item \textsuperscript{105} Healey, 1996: Karvonen 2013
\item \textsuperscript{106} Arbib, 2010
\end{itemize}
aspiration and vision promoted by departments and institutes. But in practice most professions are locked into a mode-I or II operation: their practices are mismatched with their aspirations.\(^\text{107}\)

All this shows up on the top left of Civic-Design-III-(A), where inner-city communities are destroyed to make way for commercial development. This is not necessarily from bad intentions... just a result of rational decision-making for ‘financial return on investment’, with a weak and deregulated planning system, and with dissent excluded (protestors can be seen through the window of the boardroom). Zooming in, the building design is mono-functional and ignores human needs: the playground is behind the car-park and parents can’t see their kids, which undermines defensible space and social cohesion.\(^\text{108}\) The overall design concept is a ‘machine for living’, even in the details of windows, lobbies or door furniture. The typical process of urban design / master-planning is on the middle left: the objectives are financial profit and professional prestige, and the results are surface gloss. If we could hold a round-table of actors and stakeholders, at the lower left of Civic-Design-III-(E), there would be trust gaps, split incentives, power hierarchies and information asymmetries, and the local residents and businesses are simply ‘outside the loop’.

As for the alternative, in Civic-Design-III-(B&D), there are ‘places and spaces’, with diverse multi-functional landuses, where housing, commercial, public and ecosystems are combined for added value. Decision-making is inclusive and creative, focused on ecological and social criteria such as ‘social return on investment’, the process is centred on neighbourhood forums and a ‘planning for real’ updated for the digital age. The built form is multi-functional, diverse and responsive to human needs, and even the smallest details show design by humans for humans. The design process, centre right, shows how design objectives are geared towards social finance, the process is multi-functional and inclusive, and the outcomes are long-term urban transformation. The round table of actors shows a very different pattern of relations, in Civic-Design-III-(F). Finance providers are embedded in the community, as are construction firms and small businesses. Residents are ‘in the loop’ and a diversity of civic society organizations helps to rebuild the social fabric. Each of the professions – architects, surveyors, planners, developers, housebuilders – have incentives to design and build ‘with and by the people’.

As to how to do it – well, spatial planning is by definition a knowledge-based process, but at present it’s quite un-informed. There’s new potential for social media forums, deliberative polls, virtual markets and online learning resources. But simple information is just the start – the goal is to enable the chain from information, to knowledge, to intelligence, to wisdom. We can anticipate a pro-active planning system of the near future which is based on real open-mind collective intelligence. Here all citizens and groups and networks can exchange visions and ideas, hopes and fears, resources and needs, in a city-wide arena, both online and face-to-face (more on the virtual side in Smart-Communities-III). In the background is a city vision which isn’t fixed in economic or political structures, but more like self-organizing and responsive to all its citizens. In that sense, a synergistic mode-III wise planning and design is just one layer in a bigger picture.

The implication is that if we follow the advice of Le Corbusier and build ‘machines for living’, we are building a city for robots rather than humans.\(^\text{109}\) If we refocus on synergistic ‘places for liveability’

---


\(^{108}\) Newman, 1972

\(^{109}\) Le Corbusier, 1923
then things are much more interesting. So the architect may be also a sociologist, the surveyor a social entrepreneur, the landscape designer can be a food activist, or the developer a micro-finance crowd-funder. Likewise on the other ‘non-expert’ side of the table, a disaffected youth may be a cultural entrepreneur: a disabled pensioner is an expert on biodiversity: an asylum-seeking migrant can set up social care and learning hub.

All this can work well for grassroots communities, urban or rural, with potential for co-evolutionary change. But other parts of a city system – airport terminals or shopping malls come to mind – have different kinds of communities, less local and more city-regional. For these, there’s a practice of ‘master-planning’, whose name suggests a dominant role and viewpoint from 10000 metres. At present master-planning is mainly a valuation calculation and arrangement of lettable floorspace in viable chunks: it works more or less on a mode-I and mode-II basis, with occasional self-promotion for ‘liveable communities’. But with a different orientation, the master-planner can be a (gender-neutral!) community developer, social entrepreneur and ecosystems steward on a larger scale, working widely and deeply to envision, negotiate, mediate and advocate. While commercial appraisals and financial valuations are still needed, the direction is towards the co-evolution of larger communities with a City-Region-III.

---

110 Bauman, 2009: Lewis & Conaty, 2012
111 Ravetz 2017 (Al Waer, 2014)
Figure 4-6: **CIVIC-DESIGN-III**

**CIVIC-DESIGN-III**

**a) ‘CLEVER/ SMART’ CIVIC-DESIGN-I&II**
- Development system is driven by financial profit extraction
- Viable housing & communities are destroyed to make way for commercial development
- Decision-making is one-way for financial Return On Investment
- Built form is mono-functional & unresponsive to human needs

**b) ‘WISE’ CIVIC-DESIGN-III**
- Development based on recirculating financial, social, ecological values
- Housing, commercial, ecological uses are combined for added value
- Decision-making is inclusive & creative, for Social Return On Investment
- Built form is multi-functional, diverse & responsive to human needs

**c) SYNDROMES: DESIGN PROCESS-I&II**
- Designers parachute in, exit with fees
- Design process is elitist & exclusive
- Construction is allocated at lowest costs
- Details for surface gloss & short term cost saving

**d) SYNERGISTICS: DESIGN PROCESS-III**
- Designers involved before during & after
- Construction is procured for local skills & innovation
- Details for long term social value & adaptation

**e) SYNDROMES: ROUND TABLE-I&II**
- Incentives for hi-value projects & fees
- Media looks for sensation
- Short political cycle
- Starved of resources

**f) SYNERGISTICS: ROUND TABLE-III**
- Incentives for shared value/ regeneration
- Media part of value loop
- “Public” & residents not in the loop
- “Public” & residents not in the loop
- Social infrastructure
- Local NGOs build social fabric

This design is a machine for living... (the robots like it)
Civic-Design-III is one angle on a bigger picture – the city as ‘drama in time’. Cities move and change, and one way to describe this is the ‘Panarchy’ cycle of renewal, previously mapped in Cities-Syndromes-(B). At present, most urban planning assumes a growth agenda. But this is just the first phase in the cycle: when the next phase of decline and/or crisis comes up, such problems are passed to a different section for ‘regeneration’. And this often involves quite disruptive or painful relocation, restructuring, rebranding, reframing and many other ‘re-’ words.

Such dramas are sketched on the upper left of Cities-Pathways-(A): urban change as a combination of mode-I and mode-II thinking. When and where conditions are favourable there is rapid expansion of mono-functional cities, on a profit-seeking resource extraction model, seen for example in Dubai or Shanghai. Sooner or later this reaches towards a phase of climax and conservation, where urban form and structure expands to the optimum, tending towards a stratified and hierarchical society and economy – the ancien regime, or the Rome of bread and circuses. Sooner or later, just as in a forest fire, there is a release / crisis / tipping point, where changing conditions cause sudden collapse. Then we see obsolete activities, empty structures and stranded communities, where the fittest leave and the most vulnerable are stuck. The ‘shrinking city’ is seen in extreme form in Detroit, Leipzig, Chelyabinsk and others built on a mono-functional industrial base. The ‘splintering city’ concept describes the wider effects of this, a fragmentation of society and its institutions, accelerated by an extractive and elitist political economy.

In the later stages of the urban cycle comes ‘re-organization’. In the linear-evolutionary version we see waterfront gentrification behind security fences, where those ‘in the loop’ make fast money, while the unskilled and vulnerable become casual workers, or maybe hostages to an abusive welfare system. To reshape and reframe the city in a neo-liberal gentrification model is all justified as ‘rational’ urban planning.

By contrast there’s a more synergistic cycle of urban change, sketched on the upper right of Cities-Pathways-(B). Here the first phase of growth aims for co-evolution of multi-functional cities which are diverse, creative, inclusive and regenerative. At the climax and conservation phase, the city is based on diversity, resilience, multi-scale and multi-functional liveable communities and prosperous economies. So, when release / crisis comes, as it inevitably does, diverse and resilient communities and economies can better adjust to change. Building and industrial structures are carefully demounted and saved for re-use, with priority for the most vulnerable members of society, so the crisis is a temporary release rather than wholesale destruction. The conditions are then laid for a

---

112 Geddes 1915
113 Holling 1986: Gunderson & Holling 1992
114 Martinez-Fernandez et al, 2012
115 Bouzarovski et al, 2007: Graham and Marvin, 2001
more constructive and strategic re-organization, one of co-creation and co-innovation, with physical space and economic opportunities for social-cultural enterprises. This is the real ‘sustainable regeneration’ – not just returning to the normality of an extractive marketplace – but a wider transformation towards a more synergistic alignment. Overall, urban and social / economic change is inevitable, but there are ways to turn a myopic (mode-I / II) crisis and disruption, into a (mode-III) co-evolution and transformation. As to how can this be done: here are notes on pathways, firstly for the earlier growth phases, and then for the later regeneration.
Figure 4-8: CITIES-PATHWAYS

**CITIES-PATHWAYS**

**a) ‘CLEVER / SMART’ CYCLE OF CHANGE**

- **4) RE-ORGANIZATION**: Waterfront gentrification: security fences, unskilled & vulnerable are excluded.
- **2) CLIMAX / CONSERVATION**: Urban form & structure expands to optimum in stratified society.

**1) GROWTH**: Rapid expansion of mono-functional cities, materialist, profit-seeking, extractive.

**3) RELEASE / CRISIS**: Changing conditions & collapse: obsolete activities, empty structures: vulnerable suffer most.

**d) ‘CLEVER’ / ‘SMART’ CITIES-I&II**

- Hierarchical & technocratic
- Mono-cultural, exclusive
- Dependent & peripheral
- Extractive & wasteful

**NEIGHBOURHOOD**: passive & fragmented

**LANDUSE**: mono-use, machine scale, disconnected

**HOUSING**: Marketized or bureaucratic

**CIVIC DESIGN**: closed & fixed process

**b) ‘WISE’ CYCLE OF CHANGE**

- **4) RE-ORGANIZATION**: Creative & DIY zones emerge, new social-cultural spaces & enterprises.
- **2) CLIMAX / CONSERVATION**: Diversity, resilience, multi-scale & multi-use optimum for economic, social & ecological prosperity.

**1) GROWTH**: Enriching multi-functional cities, diverse, inclusive, regenerative.

**3) RELEASE / CRISIS**: Diversity adjusts to change: buildings & industries are demounted; most vulnerable take priority.

**e) ‘WISE’ CITIES-III**

- Open democracy & co-production public service
- Social innovation & mutual aid
- Digital co-learning & co-creation
- Local livelihoods & global links
- Diversity & adaptation

**NEIGHBOURHOOD**: multi-functional, self-organized

**LANDUSE**: multi-use, human scale, inter-connected

**HOUSING**: Participative, collaborative

**CIVIC DESIGN**: Open-minded creative process
Urban development pathways

Faced with a blank sheet or empty landscape, how to build a synergistic city? This is the classic Garden City agenda of utopian planners and architects. However from experience, utopian blueprints are often hopelessly myopic and ‘design deterministic’, assuming that a physical pattern can mobilize an entire urban system. This was shown by new cities such as Chandigarh or Brasilia, or recent eco-technology experiments such as Masdar or Songdo, also dis-connected and mono-functional.116

In historic times there was a geographic ‘reason for being’: a natural harbour or river crossing would be the location for a trading hub, which over time would evolve with larger functions and services and populations. In the present situation of global supply chains and social networks, the dynamic ‘reason for being’ is more volatile and vulnerable, trying to capture fleeting quality-of-life factors, or highly mobile skilled professionals. New urban settlements are often driven more by external forces, with population and housing numbers translated into economic or political imperatives: and also by the dynamic of social aggregation / segregation (i.e. location choices for proximity to the like-minded). In the UK, new settlements or urban extensions are basically political, struggling to find an opening in a highly regulated game of land, permissions, finance and infrastructure. So when the gates are opened in a growth area, 5000 or 10000 new homes are suddenly dumped onto the map, against strong opposition and with little chance of a co-evolution process.

Maybe there are ways for the physical city, the urban development ‘on the ground’ to enable other social or economic or ecological systems, to self-organize with co-learning, co-creation and co-production – with the end goals of vibrant local economies, social enterprises, cultural exchanges, healthy ecosystems and so on. This also suggests that the physical urban form itself needs capacity for self-organization, adaptive renewal, creative space and learning from feedback. These qualities can be seen in cultural townscape and historic buildings: these are the ones which have learned and adapted, with cultural time-depth and social flexibility which grows and matures with their users.117

For urban self-organization capacity, we look for physical or spatial generators and hubs, not so much for place-making (as if designers could make places), more like ‘place-co-evolution’. The most common social hub is the primary school, but this may not last in an age of education privatization and deregulation. Demographic ageing is another kind of generator, not to advocate a retirement enclave, but rather to celebrate inter-generational links between young and old, and to enable where possible mutual aid and interaction. In contrast the younger generation in many countries is in deep flux and insecurity, in jobs, careers, housing and social life. A synergistic urban development would look for new hubs in ‘creative zones’ – mixed and short life tenures, temporary live-work-share warehouses and workshops, cultural happenings or peri-urban eco-communities.

Ecological generators start with landscape structure, for both quality-of-life and climate-proofing, as seen on waterfronts where values and intensities all ramp up. A more fundamental generator is food, and the aspiration for local and healthy food could be a powerful logic for future urban forms. Economic generators can either provide business units for present day conditions, or – possibly –

116 Cugurullo, 2014
117 Brand, 2005
look towards social enterprise mutual aid economies, networked micro-businesses, or third-age socio-cultural economies. These suggest more flexible, low-cost, variegated structures to enable and encourage self-organization, co-innovation and co-production. This could also align with circular design for energy, water, recycling and low-impact micro-climatic balance.

These issues were raised in the UK Garden Cities competition of 2014: the winning scheme by URBED proposed a series of large urban extensions, doubling the size of smaller cities in high growth areas such as York, Oxford or Exeter. So far the government has refused any new legislation, (in spite of an ever-growing housing crisis) to promote the crucial factor, the collaborative stake-holding of landowners, developers, builders and residents. From a synergistic point of view, the financial structure would be essential but just the start. Then the wider task is to envision new combinations of urban design, building tenure, community finance and management, for housing services and business, to enable flexible, adaptable, multi-functional spaces and places for the open-mind City-III.

**Urban regeneration pathways**

Sooner or later cities go around the cycle, but the response to decline or failure, via ‘urban regeneration’, is often controversial, messy and conflicted. Urban decline was normally framed as a ‘market failure’, needing large public interventions, targeted on areas in a spiral of decline. But experience shows that such interventions can be costly and not always effective: so then follows a reaction back towards a free-market, small state approach. From this angle, ‘sustainable regeneration’ refers to a localized decline in property values, requiring just enough intervention to get back to the true path of free-market development.

In this way regeneration is hugely political – maybe a political process with technical inputs, rather than a technical process with policy decisions. What should be the thresholds for intervention, area-wide, city-wide, or sector-wide: and should policy ‘invest in success’, or the ‘worst first’, or welfare reform, or urban innovations?

Synergistic thinking and mapping can help with problems and responses and opportunities. The problems can be seen as systemic, cumulative, syndromes (i.e. lack of synergies) in the ‘wider’ community of actors: ‘deeper’ syndromes between social, economic, cultural forces: and ‘longer’ syndromes or mismatches between mode-I or II systems, and mode-III needs and aspirations. These syndromes show up in various pathway mappings – from **Housing-III: Local-onomics-III: Multi-Level-III** and **Public-Service-III**, all the way to the bigger pictures of **Political-Economy-III** and **Societal-Pathways-III**.

If urban problems are ‘wider-deeper-longer’, so would be the opportunities and pathways. A more synergistic Regeneration-III is sketched on the upper right of **Cities-Pathways-(B)**. Here, in crisis or release, diversity builds resilience to change, buildings and industries are demounted, the most vulnerable take priority, and in the re-organization, creative DIY zones emerge with social-cultural spaces and enterprises. Overall, this Regeneration-III calls for different responses, not only a linear

---

118 Rudlin with Falk 2014  
119 Deakin et al 2012  
120 Breheny and Hall 1988
agenda for building more units, more about cultivating the inner resources of the community, the social economy and cultural foundations, as a ‘deep place’.\textsuperscript{121} This brings up colourful metaphors and images for a more synergistic, wiser kind of urban regeneration:

- ‘City gardening’: planting of seeds, incubation and cultivation, to enable the natural growth and self-organization of a diversity of habitats and ecosystems, human and natural.
- ‘City cooking’: intentional assembly of ingredients and resources, and putting together in synergistic combinations, to create experiences which did not exist before.
- ‘City weaving’: gathering the threads and inter-locking them with collective intention to form bigger and more durable pictures.
- ‘City therapy’: a dysfunctional and dis-connected urban web is in some ways like a person going through a cognitive re-evaluation (certainly more like that than some economic machinery). So, useful insights and techniques might be adapted from psycho-therapy.

This last comes up in the view of post-industrial decline and uneven globalization as deep inter-generational trauma, deracination, humiliation and resentment.\textsuperscript{122} This then emerges in flashpoints and blame targets, such as migrant and ethnic tension, which is easily channelled by racists and demagogues. The unravelling of 2016 seemed to bring all this to the surface, just when the UK government’s interest in urban regeneration is about zero, and much of Europe and North America is absorbed in culture wars. In these turbulent times, there’s a huge challenge for the wise City-III model, in the face of myopia and unreason to promote open-mind synergistic thinking.

Pathways & next steps
How to put these various strands and pathways together? Actually there isn’t a master blueprint or supercomputer model with The Answer. But there are ways of working which are more open-minded, collaborative and co-evolutionary, looking beyond today’s problems, to tomorrow’s opportunities.

Summary sketches of the mode-I and mode-II linear or extractive model, show tensions between regulation versus market systems, on the lower left of CITIES-PATHWAYS-(c). In this caricature, government is hierarchical and disconnected: civic-design and planning is technocratic and adversarial. Landuse and the urban patter is mono-functional, machine scale, disconnected: and community is passive and fragmented. In contrast, on the lower right side are the components of a more synergistic, co-learning, co-creating, ‘wise’ city-III. Its urban form and fabric is diverse and multi-functional: communities are pro-active and empowered: there are multi-way feedback channels for responsive governance.

On this picture we can overlay ‘pathways’, broad directions from the present to a desired future, as in the lower right of CITIES-PATHWAYS-(d). A ‘pathway’ here is a flexible and creative bundle of visions and goals, synergies and opportunities, learning and skills, resources and enablers, and the vital open-mind factors. One kind of pathway stays within its domain, for instance a pathway from a

\textsuperscript{121} Lang and Adamson 2014
\textsuperscript{122} Mishra 2016
present economic system to a future one. Another kind of pathway is about inter-connections, such as ‘low-carbon finance’, or ‘social network design innovation’.

Practical working pathways are mapped and designed for practical working situations, different for every kind of problem in every city. So here, we can only show very generalized directions, with examples of cross-cutting innovations, enterprises, hubs and networks.

For city greening, we look for ‘re-wilding zones’ and eco-resistance fronts, in locations from peri-urban fringe to inner city: from the New York ‘High Line’, to the Canadian greenbelt campaign, to the Global Anti-Aerotropolis Movement. Cities in northern or southern locations need ‘climatic zones’ with semi-enclosed micro-climatic areas, or urban ‘Incredible Edible’ grow-zones.\textsuperscript{123} New forms of mutual finance, collateral, ownership and stewardship are emerging: we look for urban ‘co-investment zones’, with social crowd-sourcing for equity finance, focused on social or eco-innovation. For new enterprise we look for incubators, warehouses, platform areas, with access to temporary buildings and land, experimental living labs, mind-labs and fab-labs, as signalled in ‘Barcelona 5.0’.\textsuperscript{124}

The creative energy of so-called ‘ordinary people’ is perhaps the biggest resource of all. We could look for places and spaces and resources for social groups, adventure playgrounds and outdoor classrooms, senior artistic zones, holistic health-hubs, give boxes, and mutual care hubs. Every city should make room for ‘re-homing zones’ for people in vulnerability, to build or borrow low cost, temporary or portable, self-organized shelters such as Tiny Houses, including support systems.\textsuperscript{125} We look for ‘reciprocity zones’ – mutual aid networks for social care and exchange, matching social needs with local time and resources. The physical built environment is only one part of this, but it certainly helps. It works at the micro-scale with ‘home-zone’ streets and social-hub shops: and at the macro-scale, we look towards a City-Region-III, with room and resources for diverse cultures, creative enterprises and mutual communities.

At this point practitioners ask, so far so good, so where to start on a Monday morning?

The very short answer is: think about the problem at hand, whichever is the most topical, shorter and longer, nearer and further. Gather the people you need, around a table if possible. Try drawing concept maps of the problem, in all its complexity and with its layers. Then try mapping factors of change and uncertainty. Third, mapping of opportunities and solutions. Fourth, mapping of pathways and strategies.

Beyond that, there’s no general blueprint to solve all problems. However there is a synergistic method, in four stages and 12 steps, as in the \textit{SYNERGISTIC-TOOLKIT} in Chapter 3. There are general ‘user pathways’ with tools, methods and resources, in \textit{USER-PATHWAYS} in Chapter 10.

There are three summary tables in the Annex, to be adapted for any urban problem. One is the synergistic ‘mapping summary’, with a ‘wider-deeper-longer’ report on ‘the problem’. The second is the ‘process summary’ with the 12 step cycle. The third is the ‘design summary’ of the pathways.

There’s a continuing series of case studies and practical guides online.

\textsuperscript{123} Examples with links in Ravetz 2015
\textsuperscript{124} Batalla and Ribera-Fumaz 2015
\textsuperscript{125} Mitchell, 2014; Heben, 2014
Synergistics here is a toolkit, which can help to design and build the house, but the location and materials and residents are each to be decided...