



CURE RESEARCH WORKSHOP

RESILIENCE OF WHAT FOR WHOM??

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[https://msd.unimelb.edu.au/
experiential-adaptive-
learning-tools-for-a-resilient-
built-environment](https://msd.unimelb.edu.au/experiential-adaptive-learning-tools-for-a-resilient-built-environment)



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1. Resilience in perspective
2. Mapping resilience
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CONTEXT –

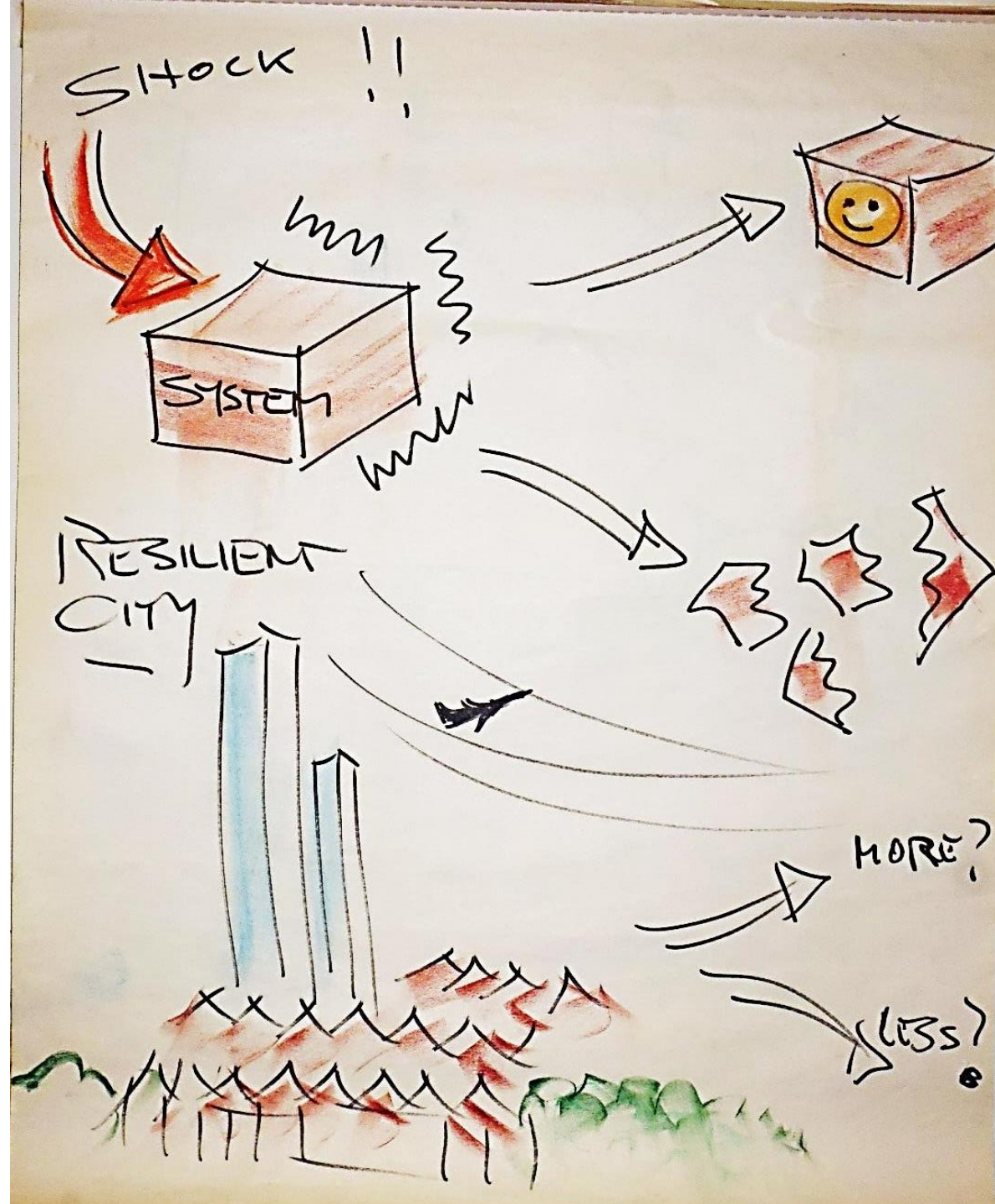
- Manchester-Melbourne collaboration: R&R workshop: learning resource: UN Habitat: Rockefeller 100RC
- Greater Manchester Resilience Forum & 100RC
- CURE agenda: vulnerability / resilience in theory & practice.
- Synergistics agenda: resilience & collective intelligence



Resilience to what? For whom? And when?

Is a resilient city one
where the existing
structures of
exploitation and
domination can be
maintained under
pressure???

Examples of resilient
systems: North Korean
regime: global tax
havens: international
arms trade



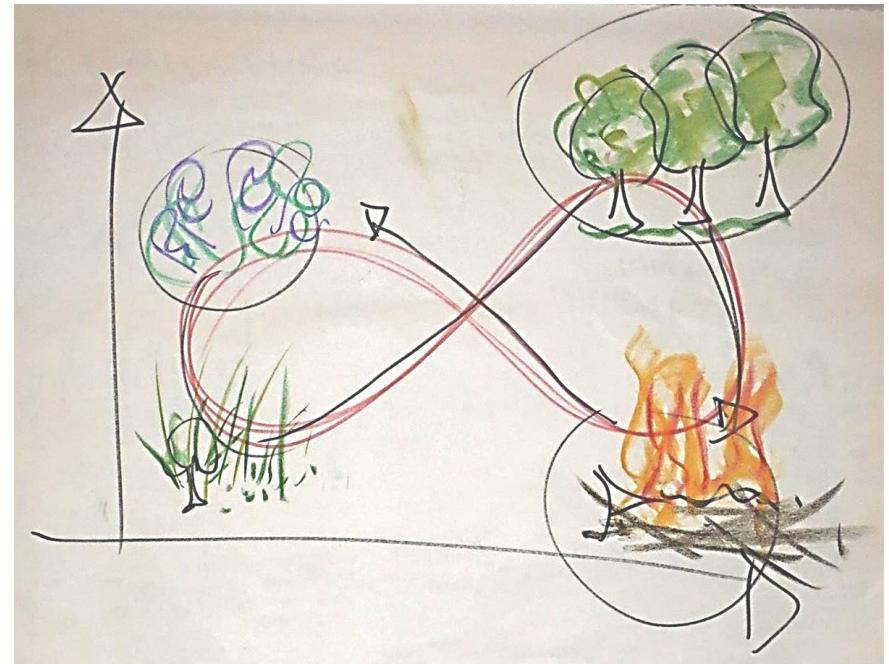
Resilience in dynamic cycle of renewal

Panarchy ideas are used by the Resilience Alliance.

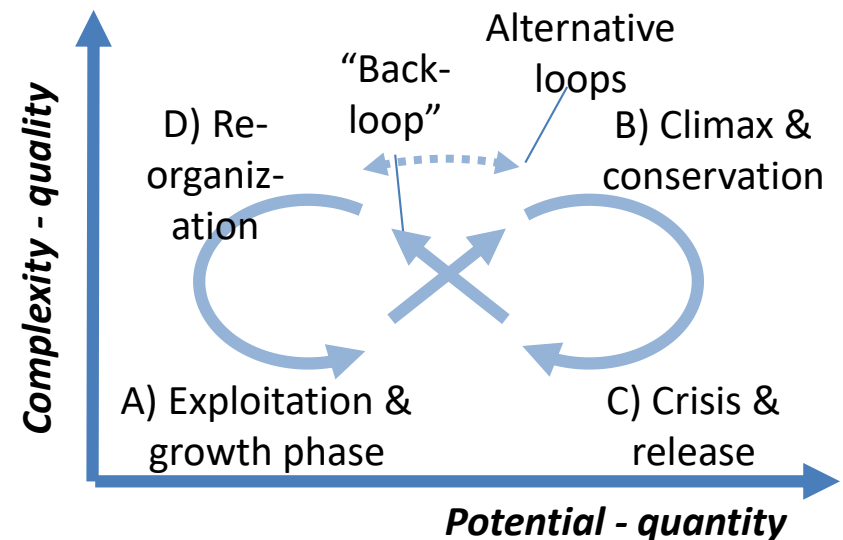
Axes can be drawn with quantity Vs quality (biomass vs complexity)

The picture shows a typical forest ecosystem, with a growth phase, climate phase, crisis / release phase & restructuring phase.

Here is the adaptive renewal cycle, from ecological systems & complexity modelling. Four phases of growth, crisis, re-organization and exploitation



ADAPTIVE RENEWAL CYCLE

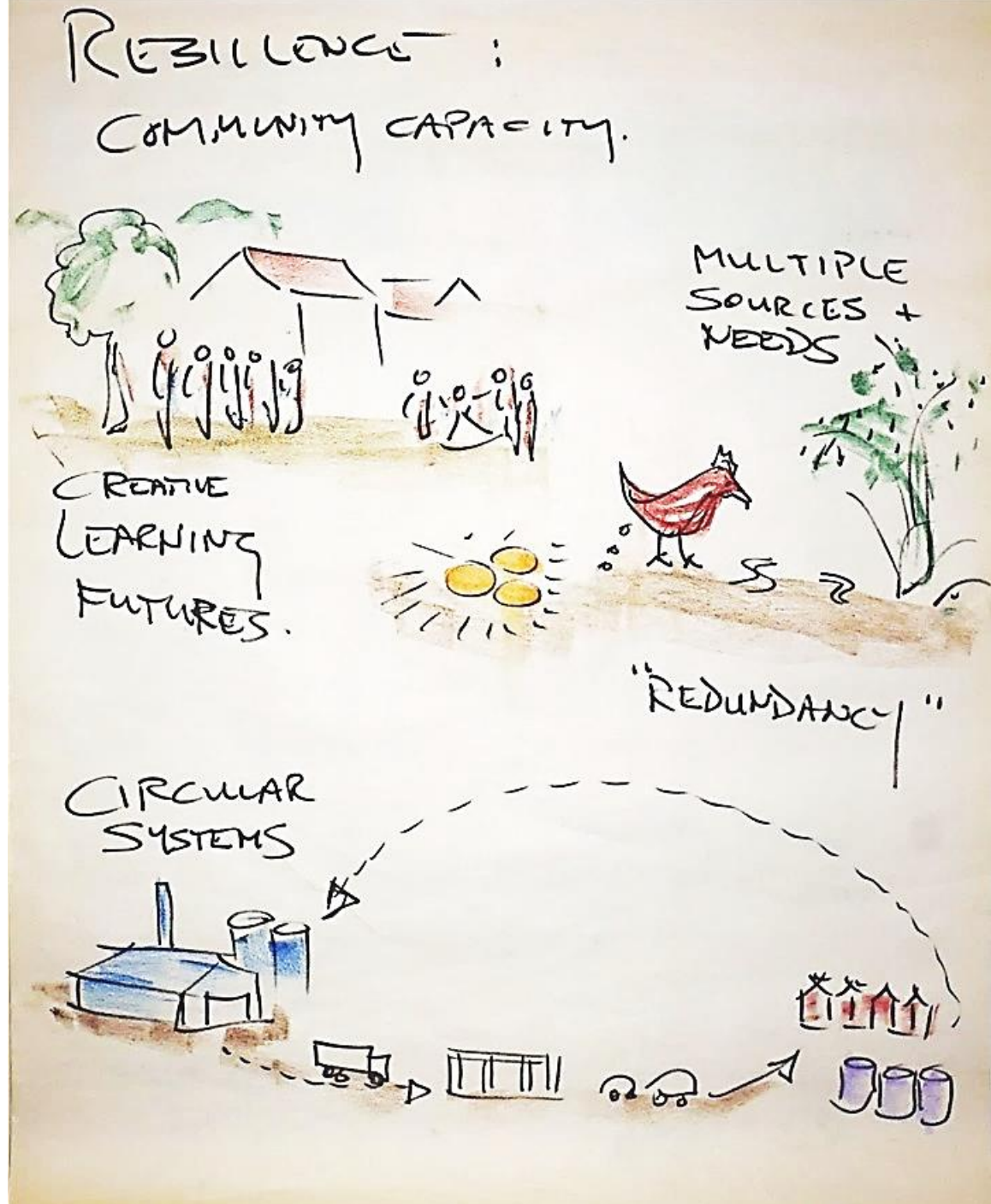


Resilience in terms of capacity: multiplicity: circular systems.

The implication of a circular economy is we're looking at resilience of wholes not just parts.

But there isn't always a clear definition of what is the whole system. Reality is often complex

My take – in the absence of a single 'rational' system, the agenda shifts to process – learning, deliberation, strategic intelligence etc: but also to conflicts of power & ideology.



Resilience, complexity, dependency & inter-dependency

From 'static to dynamic' resilience

.....

Political economy example –

Nordic communities seem very resilient, but is this vulnerable to dependency on the state??

National park example –

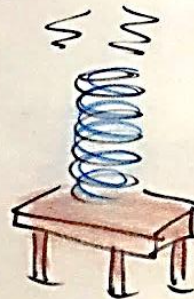
- ecology & landuse in flux
- Communities in flux
- Economies in flux
- E.g. Our new visitor centre needs a car park so some wetland will have to move...
- What does resilience mean in a context of inter-dependency???

VULNERABILITY TO
STATE DEPENDENCY
IN NORDICS

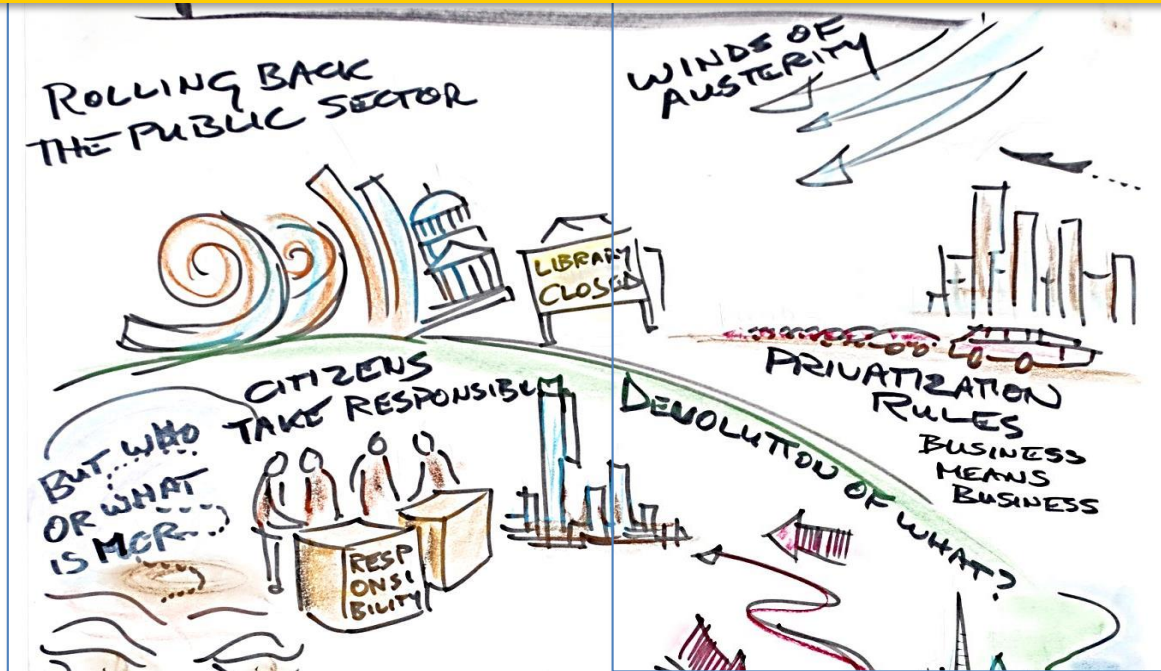


RESILIENCE
RESILIENCY

STATIC RESILIENCE $\Rightarrow$ DYNAMIC +
CREATIVE
RESILIENCE



GREATER MANCHESTER FUTURES (www.gm2040.com)



AGEING AIN'T
WHAT IT USED
TO BE, ISN'T
THE GREAT
GREAT GRANDKIDS

VIRGIN
FOREVER^{PLC}

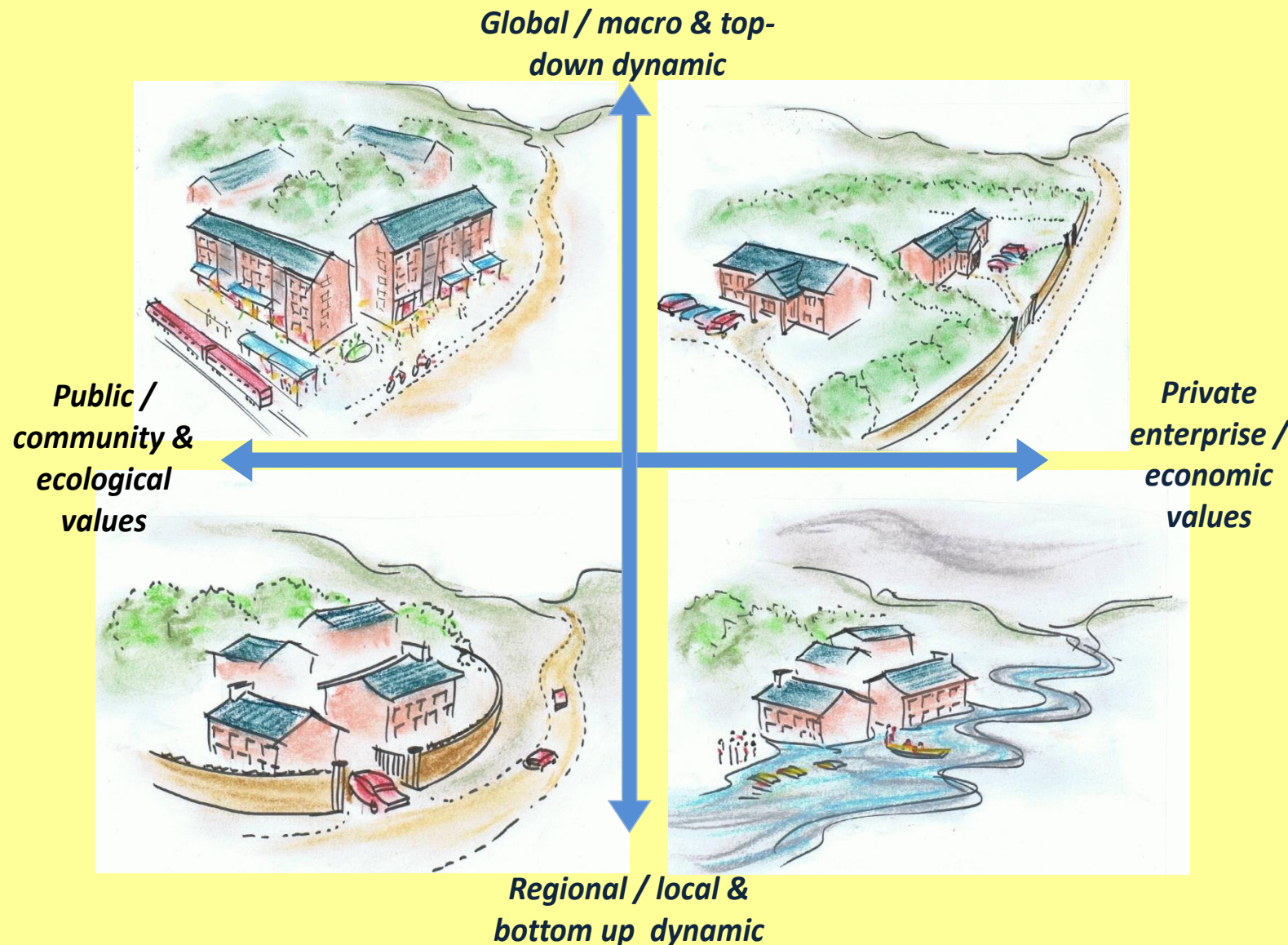


"DEATH IS
FOR LOSERS"



GREATER MANCHESTER FUTURES (www.gm2040.com)

	'GLOBAL ENTERPRISE'	'LOCAL ENTERPRISE'	'GLOBAL COMMUNITY'	'LOCAL COMMUNITY'
(IPCC scenario labels)	A1			
Greater Manchester issues	Privatized governance Airport axis grows rapidly to global hub High growth, inequality increases.			
Social, community	Fragmented society growing tensions: High population growth			
Technology, infrastructure	global hi-tech supply chains: rapid ICT innovation			
Economic, employment	Private firms, global labour market: High economic growth			
Environment, resources	ESS degradation & pollution: Rapid climate change			
Policy, governance, institutions	Corporate-driven governance: at global level			
Cultural, ethical	Material growth, winner-takes-all globalized culture			
Urban / spatial development	Car-based urban sprawl, with sealed buildings: Counter-urbanization			
UK system of cities	London / SE continues to grow & dominate			
Pressures & vulnerabilities in urban system	Airports & other hubs are over-used with major pollution, urban heat island etc			
Gaps & opportunities in the urban system	Derelict & under-used land/resources widespread, due to sprawl & pollution			



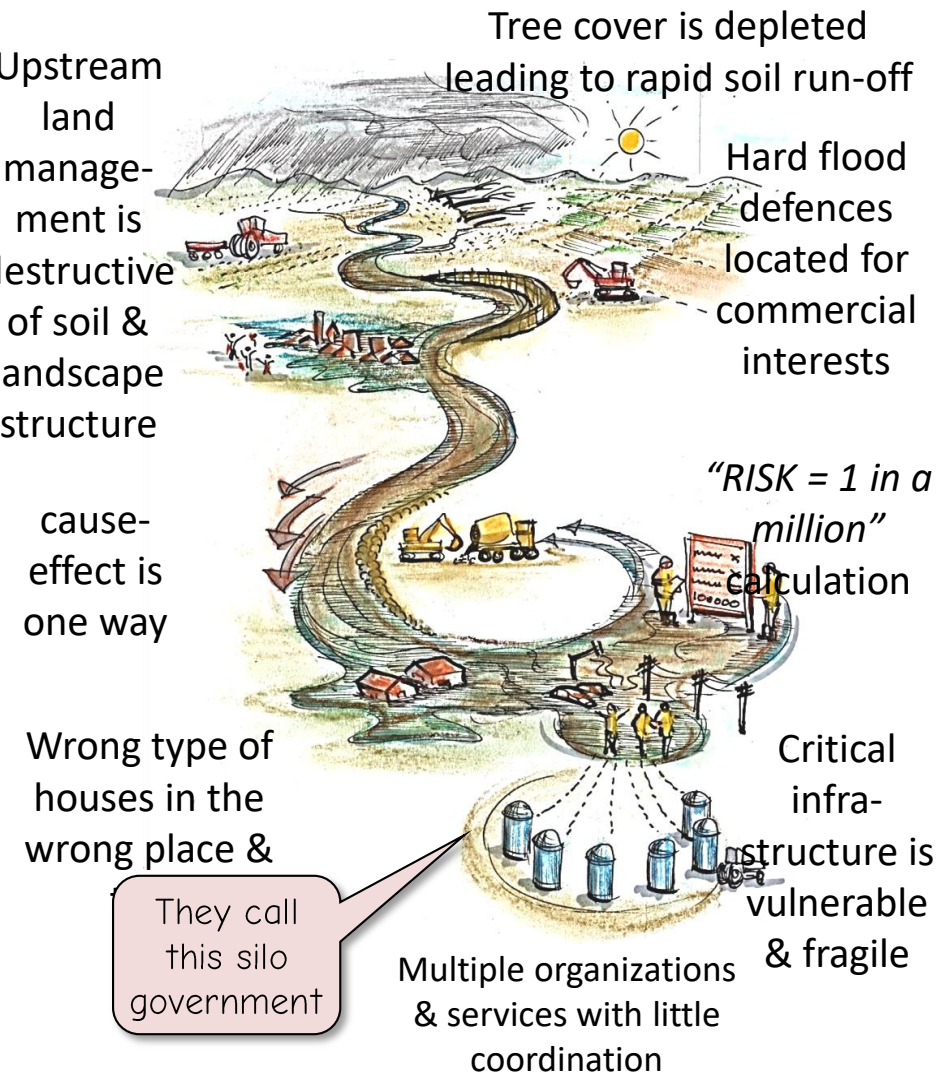
MAPPING RESILIENCE – A SYNERGISTIC APPROACH



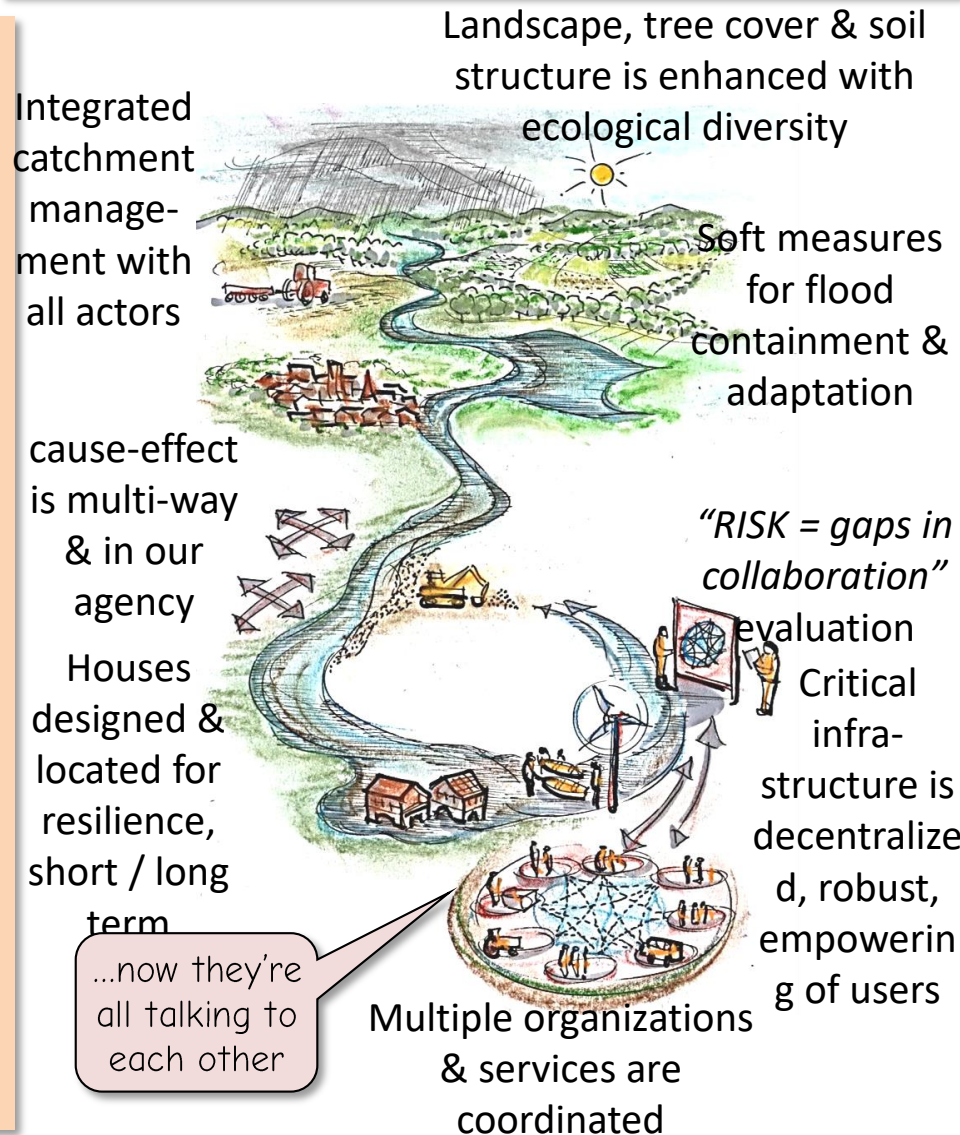
RESILIENCE-III

Example: flood risk, climate adaptation, urban resilience: (based on Arup et al 2014):

'CLEVER / SMART' RESILIENCE-I&II



'WISE' RESILIENCE-III

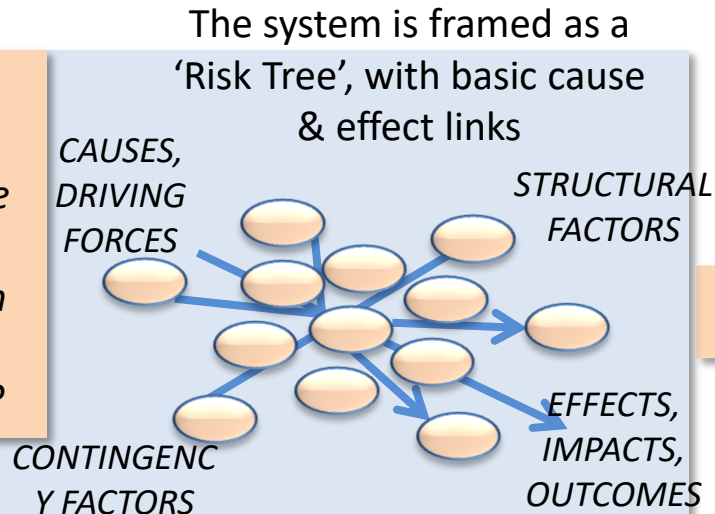


ANALYSIS

LINEAR-EVOLUTIONARY RISK - I&II

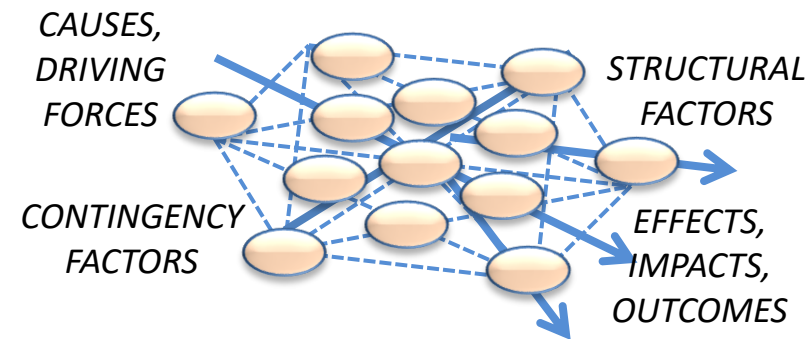
'WIDER'

Factors:
what is the
nature of
the system
of risk or
resilience?



CO-EVOLUTIONARY RISK - III

The system is framed as a 'Risk Network', with inter-connections between many factors & feedbacks

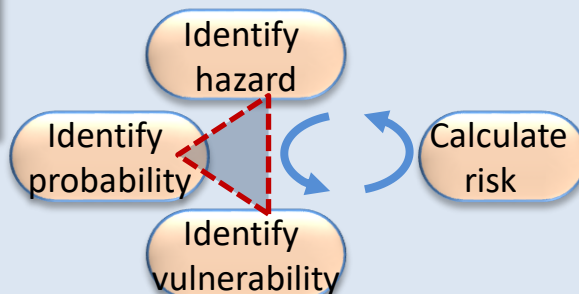


A simple linear index (triangle):

$$\text{risk} = \text{hazard} \times \text{probability} \times \text{vulnerability}$$

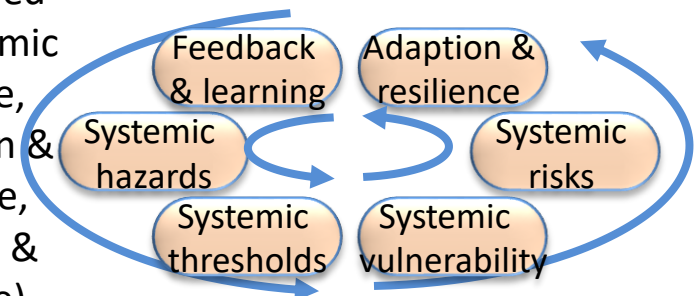
'CIRCULAR'

: how is risk
assessment
done?



Risk assessment includes
learning, adaptation, foresight
& hindsight

Systemic risk
is combined
with systemic
response,
adaptation &
resilience,
(material &
cognitive)



RESILIENCE-III

- **‘Wider’** synergies between communities of actors and factors, (people or organizations or institutions). We start with the people around the table, their inter-connections and exchanges (or conflicts and power structures).
 - **‘Deeper’** synergies between different value systems – e.g. social, technical, economic, ecological, political and cultural.
 - **‘Further’** synergies which emerge from systems change and emergence
- linear-type, ‘bounce back’ **‘Resilience-I’** strategy - build higher walls in response to flood risk.
 - evolutionary type, **‘Resilience-II’** looks for interactions of flood risk, property and infrastructure, with innovations, markets;
 - co-evolutionary, transformative **‘Resilience-III’** - enables learning & collective intelligence of all stakeholders. It aims towards a co-evolution of urban systems with climate challenges.

RESILIENCE MATRIX

	FURTHER>>>	Mode-I Linear	Mode-II Evolutionary	Mode-III Co-evolutionary
		‘CLEVER’:	‘SMART’:	‘WISE’:
	CLIMATE PRESSURES/RISKS>>	Sea level: heat waves: eco-disruption	Geopolitical instability: migration	Systems disruption & social vulnerability
	DEEPER: domains			
	Social resilience			
	Technical resilience			
	Economic resilience			
	Environ resilience			
	Political resilience			
	Cultural resilience			
	Spatial resilience			
	Super-systems	modes of production	modes of value-added & exploitation	Modes of collaboration
	<i>Structural myths & archetypes</i>			

SHARED-MIND-LAB

Here's a typical Synergistic workshop in 4 stages & 12 steps

The programme can work in 4 hours, 4 days, 4 weeks or 4 months

1) 'SYSTEM MAPPING'

- first we explore & draw maps of 'what is our problem' & 'how does this system work'?

2) 'SCENARIO MAPPING'

'looks at future trends, dynamics, alternative scenarios

(Include some visual thinking)

(include some specialist tables)

3) 'SYNERGY MAPPING'

... the creative side, exploring new collaborations, designs, alignments, learning exchange etc

4) 'PATHWAY/ STRATEGY'

- here we converge back to practical

Finally - either go around the cycle again - or take it out to the world



RESILIENCE-III – ‘DEEPER’ – GREATER MANCHESTER

C) ‘FURTHER’ (transformations)	Mode-I Linear	Mode-II Evolutionary	Mode-III Co-evolutionary
	‘CLEVER’: (complex)	‘SMART’: (emergent complexity)	‘WISE’: (cognitive complexity)
Technical resilience	Mainly functional systems of planning, projects, maintenance etc. -VS- Lack of understanding of combined wild card effects	Privatized utilities are providing investment: -VS- vulnerability if combined with cyber attack, terrorism, technology, pandemic	Potential smart-wise city technology with citizen monitoring – -VS- Risk of techno- determinism & stupefying cities
Economic resilience	diverse metropolitan economic structure -VS- Low productivity, investment etc	High value property & professionals –VS- Majority are excluded, precarious, underpaid	Growing interest in holistic inclusive growth -VS- Dysfunctional & divisive macro- economic system
Political resilience	GM has effective devolved structure - VS - General lack of participation	Average transparency & accountability - VS - low res. by	Effective civil society & / culture of learning & innovation - VS -

QUESTIONS...

- Melbourne experience has different conditions but similar to GM in challenges.
 - How to understand combined effects, thresholds, tipping points, low probability / high impact event chains?
 - How to bridge the gap from defensive, target hardening resilience: to social-community resilience, (potentially effective but less tangible & manageable).
 - E.g. terrorist attack:
flooding: food / energy
poverty:
- 100RC program – work in progress..
 - Mainstreaming from innovation to practice?
 - Shared responsibility with citizens?
 - Citizen distrust & also dependency on government?
 - Working with difference & ‘cognitive dissonance’ at all levels?
 - Urban foresight & ‘anticipatory governance’?
 - Potential for science-policy collaboration??
 - Overall a long way to go...

WORKSHOP METHOD



RESILIENCE MAPPING

	FURTHER>>>	Mode-I Linear	Mode-II Evolutionary	Mode-III Co-evolutionary
		'CLEVER':	'SMART':	'WISE':
	CLIMATE PRESSURES/RISKS>>	Sea level: heat waves: eco-disruption	Geopolitical instability: migration	Systems disruption & social vulnerability
	DEEPER: domains	<i>if a flood hard defence (mode-I) is too costly, a social resilience program (mode-III) could be more effective.</i>		
	Social resilience			
	Technical resilience	<i>Climate adaptation could have property market effects (mode-II economics), - link to cultural resilience agenda (mode-III).</i>		
	Economic resilience			
	Environ resilience	<i>Can we map the different 'resilience models' in use, onto a bigger 'resilience landscape'?</i>		
	Political resilience			
	Cultural resilience	<i>Fukushima – tsunami – energy system – rural livelihoods – national institutions</i>		
	Spatial resilience			
	Super-systems	What new synergies or potential links with others, show up on this mapping?		
	<i>myths & archetypes</i>			

Outcomes

- Linking between different fields / sectors / of risk & vulnerability
- Linking between different policy / scientific knowledges
- Linking upstream & downstream risks & vulnerabilities
- Responding to complex inter-connected problems
- Exploring transformative opportunities / pathways / solutions