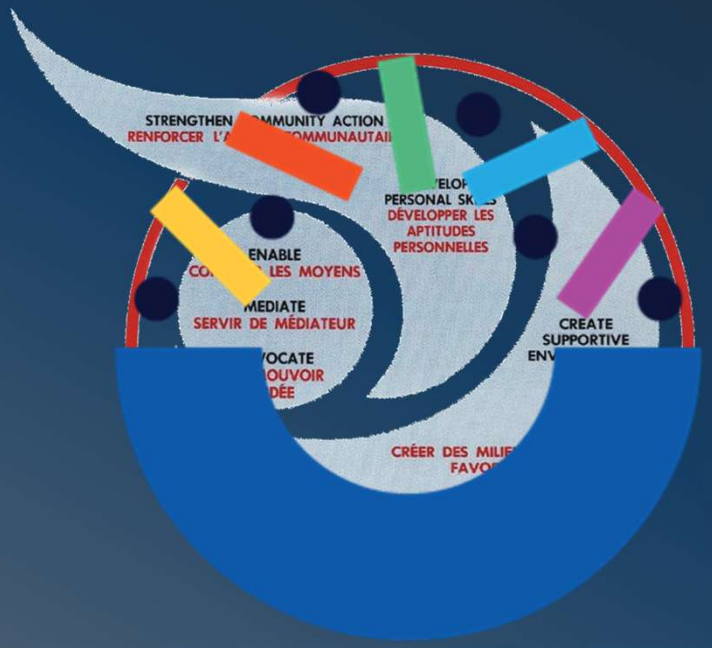


IUHPE – UIPES

INTERNATIONAL UNION FOR HEALTH PROMOTION AND EDUCATION
UNION INTERNATIONALE DE PROMOTION DE LA SANTÉ ET D'ÉDUCATION POUR LA SANTÉ
UNIÓN INTERNACIONAL DE PROMOCIÓN DE LA SALUD Y EDUCACIÓN PARA LA SALUD

Urban Design for Health

Contemporary evidence and failures

how we know what to do but ignore to deliver

Evelyne de Leeuw

CERC Une Seule Santé Urbaine

UNE SEULE SANTÉ URBAINE

ONE URBAN HEALTH

Canada Excellence Research Chairs
Chaires d'excellence en recherche du Canada

École de santé publique
Université de Montréal

CReSP Centre de recherche en santé publique

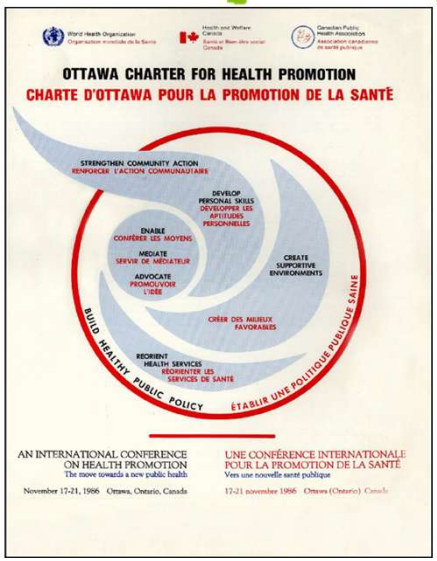
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UNSW Cities Institute

Urban Design for Health

Healthy Cities

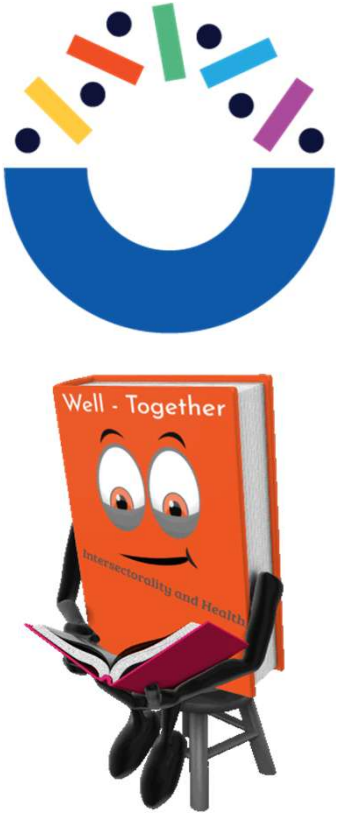




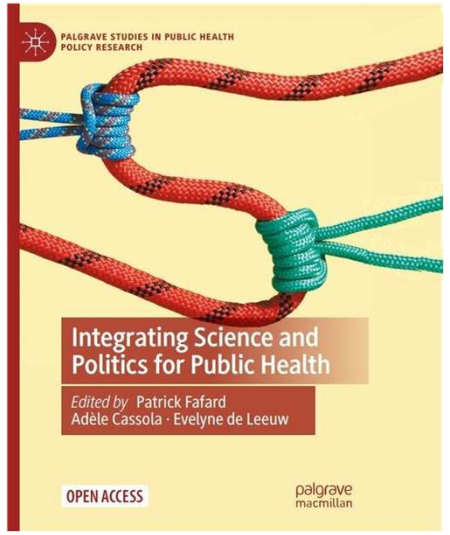
Design and Health



One Health



Governance and politics



EXTRA

Hot and bo

Sydney's Marsden Park is an example of what happ
housing crisis without also tackling the climate cris
the other worse, writes Caitli

If you set out to design a suburb that is least suited to the climate conditions of the 21st century, you might end up with something a bit like the western Sydney neighbourhood of Marsden Park.

During several summer heatwaves, western Sydney has had the dubious honour of being the hottest place on earth, a problem that is expected to intensify because of baked-in climate change even if emissions fall tomorrow.

Emissions reduction remains enormously important because every fraction of a degree in avoiding global warming matters, but the parallel task of climate adaptation is growing ever more pressing and NSW is falling behind.

Yet almost every design choice in Marsden Park, a formerly rural suburb developed since 2018, seems calculated to make the problem of extreme heat worse – and the same mistakes in urban planning have been replicated statewide.

Row upon row of giant houses are built almost to the boundary with dark roofs that absorb sunlight and make the house and suburb hotter, in what is known as the urban heat islands effect. The roads are painted an intense black, thanks to a treatment to restore asphalt that Blacktown Council says is cheaper than lighter-coloured alternatives. Even the driveways are black.

Without effective eaves to protect windows from the harsh sun, the houses are heat boxes, reliant on air conditioning that spews hot air at the neighbouring house just centimetres away. The bright spot is that there is plenty of roof space for solar panels.

Trees and greenery cool an area dow backyards are tiny, and the footpaths o room for small trees that will never pro shade. The suburb, which had a popula 15,000 at the 2021 census and is growi is also in a low-lying part of the Eastern catchment at high risk of flooding.

Sanaa Shah, who lives a few kilomet in The Ponds, says Mareden Park is an of what happens when governments f the housing crisis without also tackli climate crisis – the cure to one proble make the other worse.

"Marsden Park does not have a pers library, it does not have a pool, it drug get a public school for a long time – but getting a massive AI data centre," says community campaigner for climate ad advocacy group Sweltering Cities. "It that we have a housing crisis right now unfair for our communities to be place housing developments in suburbs that aren't built to withstand the climate fu we'll be living in."

The world is set to sail past the Paris Agreement goal of limiting global warn 1.5 degrees above pre-industrial levels few years, and 2 degrees also looks inc unlikely.

"We've got to deal with the problem have been created by the fact that the has changed and is changing," says NS Planning Minister Paul Scully in a lengt interview with the *Herald*. "And even if to hit net zero tomorrow, the science s

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EXTRA

Hot and bothered: suburbs buil

From Page 25

climate crisis is occurring at the same time as the housing crisis, amplifying the voices of developers. It can be hard to get even the simple things done. The light-roofs saga is emblematic of this.

Changing roofs to a lighter, more reflective colour seems like an obvious fix as NSW prepares for a hotter climate. Former planning minister Rob Stokes certainly thought so.

In November 2021, Stokes mandated that new builds had to have lighter, reflective roofs to save the home owner money on cooling costs, and the public purse from underwriting additional electricity capacity, and to reduce the heat island effect.

"I was gobsmacked by the reaction," says Stokes. "It was explained to me by developers that there was a consumer preference for dark roofs, that dark roofs were somehow equated with quality."

When fellow Liberal MP Anthony Roberts became planning minister in a reshuffle, he dropped the requirement. Reflecting on it now, Roberts says the idea was right but the approach was wrong, "especially at a time when housing affordability and supply were already under pressure."

The better way to deal with it, he says, was through BASIX, the NSW standard that governs energy and water efficiency requirements for new builds, which he updated in April 2022 to introduce consideration of roof colour.

The Minns Labor government also strengthened BASIX in October 2023, and it now has the practical effect of requiring lighter roofs in most circumstances. Scully says there was "fierce resistance", including from the other states.

"In most circumstances, and most climate zones, you can't get a BASIX certificate to be able to do your build with a dark roof right now," Scully says. "If you wanted to do a dark roof, and that is a choice for some people, you have to do a whole series of other mitigation effects, so it becomes more expensive."

Scully says dark roofs still work in some climate zones, such as the Northern Tablelands and the alpine regions. In the large rezonings in western Sydney the government has set a maximum solar index, which measures the solar absorption rate rather than the colour itself.

Stokes, who has since left politics, feels vindicated.

"Sometimes you've got to put out a big, bold plan and get knocked back on it because if you step in the right direction, history will catch up with it eventually," he says.

Scully says natural disaster resilience is now an object of the Planning Act, making it an unavoidable consideration from the beginning of a project. The government has been pushing a housing development policy that prioritises density around transport hubs, and none of the selected locations are in a high-risk flood zone, he says.

Even the designs in the NSW government's Housing Pattern Book – a project to provide high-



Sanaa Shah, a community campaigner for Sweltering Cities, and Professor Sebastian Pfautsch in Marsden Park. Photo: Janie Barrett

quality housing in the "missing middle" suburbs near railway stations and shopping centres – incorporate climate concerns. Scully says the patterns are all done to a 7-star Home Energy Rating (formerly NatHERS), which indicates a high level of energy efficiency.

The NSW government is spending more than $80 million through the Greening our City program to help councils in Greater Sydney, the Illawarra-Shoalhaven and the Hunter-Central Coast plant trees. The government aims to boost tree canopy from 21.9 per cent now to 40 per cent within 10 years, though experts say many suburbs in western Sydney will struggle to get past single digits because there are no trees on private properties and not enough room for large street trees.

Professor Sebastian Pfautsch, an expert in urban heat at Western Sydney University, took the *Herald* on a tour to highlight both good and bad examples of urban development. The planning flaws on display in Marsden Park are repeated in multiple suburbs and also regional cities such as Bathurst. Yet there are also examples of good urban design.

Magnusson is no longer insured since her premium jumped from $1400 to $14,000 in a year.

such as Norwest on the edge of Baulkham Hills. In the 1980s, the urban planners used a natural creek to create a series of ponds that cool the area and provide a hub for recreation. The main road has a double layer of trees planted down the median strip, providing shade and reducing the urban heat island effect, though some were removed for the construction of the Metro station.

In Fairwater, near Blacktown, opened in 2016, there is plenty of green space, water ways and trees. The houses not only have light roofs, they also have geothermal climate control – where a pipe goes into the ground and back into the house to keep a constant temperature inside the home, making air-conditioning unnecessary.

Pfautsch says new developments now might have greater energy efficiency, thanks to government reforms, but they are still making fundamental mistakes in building huge homes on small lots, with little green space. "It seems that we have forgotten how we can actually build more climate-resilient urban spaces," Pfautsch says. "And we are not getting these kind of outcomes any more for the community.

"Developers have really worked out the plan because now we have a housing crisis, now everyone wants more homes, they don't need to change that model."

Stokes laments that Australians tend to only consider the transaction costs rather than the recurring costs, such as having high heating bills because of insufficient insulation. This is compounded by the fact the person developing the property is usually not responsible for the future recurring costs.

Stokes recalls as planning minister speaking to a large national developer and sharing a business case that demonstrated how the benefits of a resilient building outweighed the costs.

"He just smiled and said to me, 'Yes, but those benefits go to the person who bought it, not to the person who sold it and, given we're the ones selling it, we don't get those benefits,'" Stokes says. "When private interest doesn't





Good and the bad: Light roofs and green space in Blacktown; dark roofs and black roads in The Ponds. Photos: Janie Barrett

to fail a



Since 2020, Sam Magnusson has experience



appropriately meet long-term public benefit, that's when the State has to step in."

With an impending El Nino summer this year, bushfires are looming as a threat once again. From a planning point of view, the building codes for bushfires are already pretty robust, although Stokes warns incremental steps can undermine that work.

"An architect friend of mine developed a home in the Shoalhaven that met all the bushfire standards, but then the owner tacked on a verandah that they didn't need to get council consent for because it was under a complying development certificate," Stokes says. "The verandah caught fire and burnt the house down."

The housing crisis makes bushfire-prone areas tempting for development, as well as floodplains. Before the 2019-20 Black Summer fires, Stokes came under "huge pressure" from Eurobodalla Shire Council to approve its rural land rezonings

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EXTRA

Hot and bothered: double crisis hits

From Page 27

Creek and South Creek flow through new and future suburbs such as Marsden Park, Marsden Park North and West Schofields before joining the Hawkesbury at Windsor.

"They bring in (millions) of tonnes of fill, put concrete down, houses right next to each other and there's no vegetation, and so there's nowhere for that water to go, it just rushes down South Creek," Magnusson says. "We have definitely noticed, even with the smaller floods, that the velocity and the amount of water coming down South Creek is much greater than it was."

Johnson, from UNSW, says that, in an urban catchment, water runs along hard surfaces into storm-water drains rather than being absorbed into the ground. This increases the chances of flash flooding locally, and the volume of water being sent downstream.

These master-planned new developments are a state-run process, but usually local councils are responsible for managing flood risk and preparing flood maps. They must follow the process in the Flood Risk Management Manual 2023, but in theory councils can determine whether the one-in-100-year or one-in-500-year level is most appropriate.

In practice, councils that are cautious about floods may find that the courts will side with developers. In April, the NSW Land and Environment Court upheld a developer's appeal against Clarence Valley Council refusing a proposed major residential subdivision in Yamba. The court found flood and stormwater risks could be managed.

The biggest change will come in the Climate Change and Natural Hazards State Environmental Planning Policy (SEPP). The policy as drafted would create more consistency in flood planning controls across the state, introduce the notion of "tolerable risk" to guide decision-making, and force councils to consider forward-looking climate change models rather than relying on historical flood mapping.

These changes have had a mixed response. Penrith City Council is eager to see the coming Western Sydney Airport region, but complains that the state government's multiple updates to flood planning policies are creating uncertainty that is constraining development.

And on the other side, Insurance Council chief executive Andrew Hall says bluntly that "we are still building on flood-plains" despite national cabinet agreeing in 2022 this should end. As insurers price in the risk, insurance coverage is retreating in areas precisely where flooding is mostly likely to occur, leaving home owners trapped with high mortgages in uninsurable properties.

"In places like western Sydney, you particularly get migrant families, who have got no idea about the history of the region, buying homes for a million dollars in areas that we know will go under a metre of water," Hall says. "Western Sydney has the greatest flood-exposed population in the southern hemisphere."







Tweed Shire Mayor Chris Cherry says after several big floods "we need to just face up to that and accept that we need to adapt"; repair works after a land slip near Byrrill Creek and the new "flood resilient" bridge at Byrrill Creek. In the foreground are the old footings from the old bridge. Photos: Paul Harris

The Reconstruction Authority's Hawkesbury-Nepean Disaster Adaptation Plan is nearing completion, and will guide future development on Sydney's flood-plain. The agency is also partway through a multi-hazard disaster adaptation plan for the Northern Rivers, and has started preparing for one for the Central West. But this work is behind schedule – in February 2024, the goal was that councils would do the work and all areas in the state would have their own disaster adaptation plan within five years.

Retrofitting

"Whatever we do, we're not starting with a blank piece of paper," Scully says. "In terms of NSW, we start with 200-odd years of history of decision-making, for good and for bad, so we've got to accept there's that part of it, as well as what we do in the future."

That means climate adaptation is not just about planning, it's about retrofitting. In extreme cases, that might mean relocating communities out of harm's way – but attempts to do that on flood-prone lands in the Northern Rivers have been beset by problems.

After the 2022 floods, the Reconstruction Authority was established by the former government, and allocated $880 million to deliver 1845 buybacks – later revised to 1000 – as well as flood resilience improvements under the Resilient Homes program. As of the end of June, 826 buybacks had been completed.

The related $100 million Resilient Lands program was also meant to fast-track flood-safe land for residential development, providing 4882 homes or lots. So far, it is yet to deliver any land for housing.

A scathing report by the NSW auditor-general in May this year branded both programs as not effectively planned, which led to significant delays and increased the risk of failure. Scully acknowledges it wasn't as quick as it could have been, but says things have improved immensely with Saffin, the recovery minister, at the helm.

UTS Professor Elizabeth Mossop has experience in urban resilience from her time in New Orleans after Hurricane Katrina and now as academic director of Living Lab Northern Rivers, an academic think tank focused on post-disaster recovery.

Many people say that Lismore, which has been devastated by flood multiple times, shouldn't be there. "But they also say that New Orleans shouldn't be there and, in fact, if you look at the maps, really New York shouldn't be there either," Mossop says. "There are enormous numbers of cities that are located in places for strategic reasons ... Lismore is a location that has always flooded, but it's also a location where lots of people live."

The problem with buybacks, she says, is "we keep treating it as a real estate transaction. It's not just

about making communities whole. The focus should be finding land for people to move to, rather than how much the government pays for the flood-prone land, she says.

Further north in Tweed Shire, Mayor Chris Cherry says the community was devastated by the 2017 floods, which were meant to be a one-in-100-year event, but they got through it and rebuilt. Then the flooding happened again in 2022.

"It really forced the realisation on our community that this was not going to be an isolated experience, and we need to just face up to that and accept that we need to adapt."

'We need to ... accept that we need to adapt.'

Tweed Shire Mayor Chris Cherry

Cherry says. "I really saw that in the community when the cyclone was coming in 2025, the number of businesses and residents that got proactive took responsibility for their own safety, and sandbagged their residence, their business, they got water in and fuel into to run generators."

Under the federal and state "build back better" policies, the council has rebuilt bridges to withstand flood. It has also moved its visitor information centre and council works depot to higher ground, and organised an industrial land swap for about eight of its largest businesses to move along with the depot.

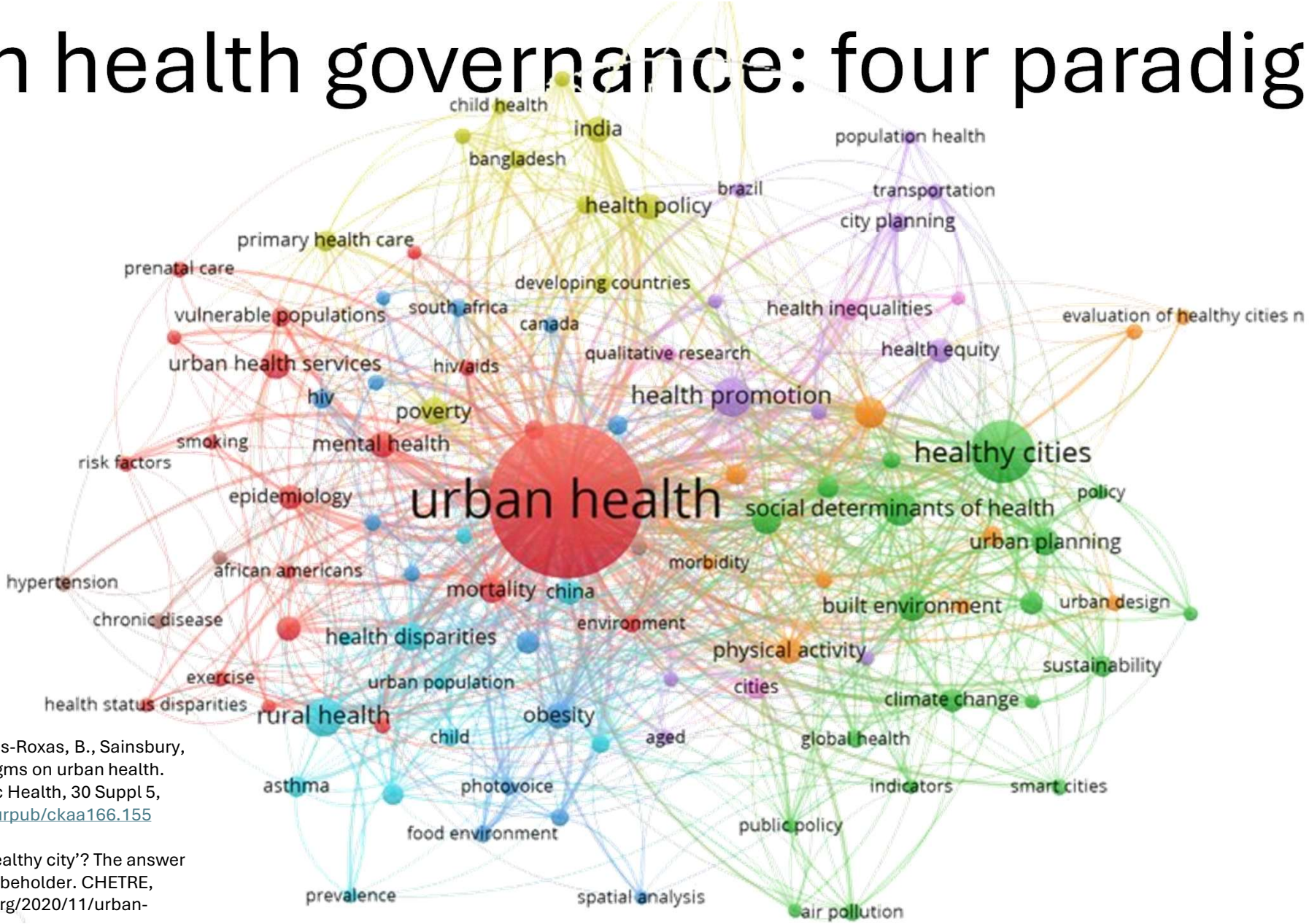
The Insurance Council has been calling for the federal and state governments on the east coast to provide $30.15 billion over 10 years for a flood defence fund to fund infrastructure such as levees and dams in high-density areas, property-level solutions like house raising in lower-density areas, and managed relocation and buy-backs in extreme-risk areas.

Hall applauds the idea of the federal Disaster Ready Fund, which has $200 million a year to spend on climate adaptation projects across the country, but says it has not fulfilled its promise. It could have funded hard infrastructure to reduce the risk to assets – such as a flood levee in Taree, which the town's council scoped out, but did not build before the terrible flood in 2025, Hall says. Instead, the fund has mostly paid for disaster readiness such as teaching people about bushfire preparation and building cyclone shelters.

Committee for Sydney chief executive Eamon Waterford says Sydney and Australia more generally are dealing with two intergenerational challenges at the same time. "One is the housing affordability crisis," Waterford says. "The other is the climate crisis. We should be treating them with the same level of existentialism.

Continued Page 26

Urban health governance: four paradigms



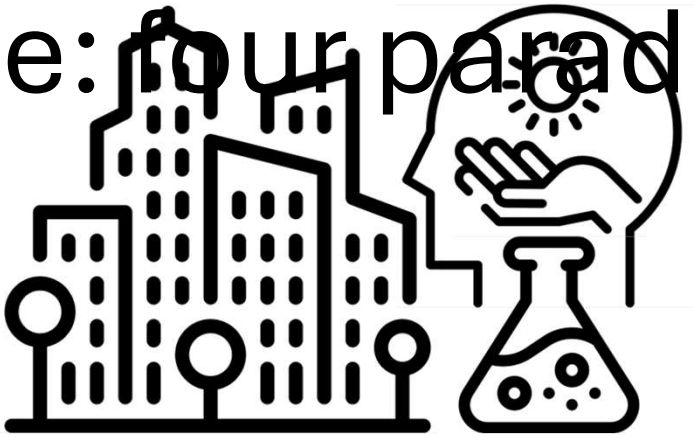
Kim, J., de Leeuw, E., Harris-Roxas, B., Sainsbury, P. (2020) The three paradigms on urban health. European Journal of Public Health, 30 Suppl 5, https://doi.org/10.1093/eurpub/ckaa166.155

Kim, J. (2020) What is a 'healthy city'? The answer lies in the paradigm of the beholder. CHETRE, Liverpool, https://chetre.org/2020/11/urban-

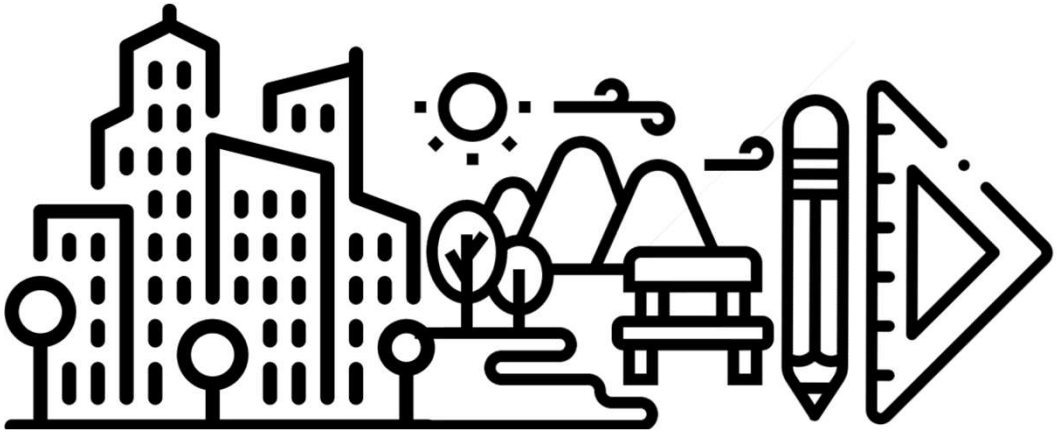
Urban health governance: four paradigms



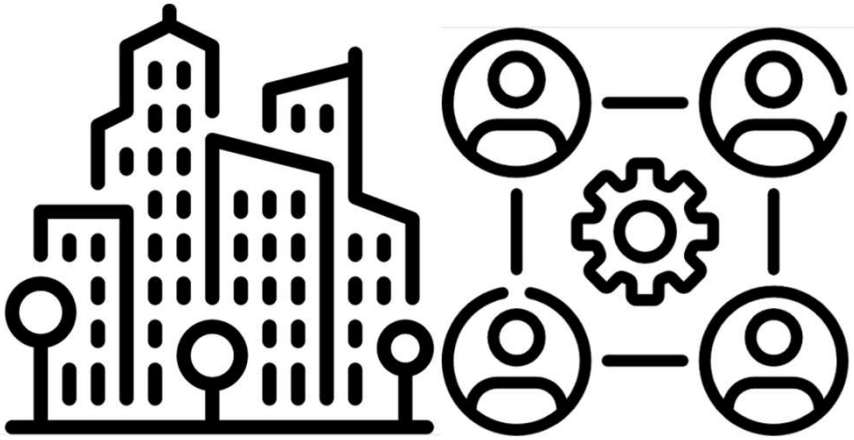
Medical-Industrial City



Urban Health Science



Healthy Built Environment



Health Social Movement

- Urban development is predominantly economic
- More economic development means more health
- Health services can/must be developed in response
- Everybody benefits/trickle down economics
- Mostly free market/neoliberal

Medical-Industrial City

- Urban development leads to different responses
- '*Only what is measured matters*'
- Academic pursuit; evidence-based policy & practice
- Inequ(al)ity can be addressed through intervention
- Mostly (proportionate) universalist

Urban Health Science

- Urban development is a planning challenge
- Health can be integrated in planning
- 'Health Urban Planning' guidelines, audits
- Health equity is a systems issue
- Health can be an integrative policy force

Healthy Built Environment

- Urban development is a community issue/concern
- Cities are pivots of people ⇨ concentration & mobility
- Communities drive policy and change
- Reciprocally engage public sector, industry, community
- Responsive targeted proportionalism

Health Social Movement

Spatial aesthetics and health…

Adaptability	Expectancy	Ornateness
Distinctiveness	Mystery	Upkeep
Intricacy	Territoriality	Continuity
Richness	Comfort	**Imageability**
Ambiguity	Focality	Prospect
Diversity	Naturalness	Variety
Legibility	Texture	Contrast
Sensuousness	Compatibility	Intelligibility
Centrality	Formality	Refuge
Dominance	Novelty	Visibility
Linkage	**Transparency**	Deflection
Singularity	complementarity	Interest
Clarity	**Human scale**	Regularity
Enclosure	Openness	Vividness
Meaning	Unity	Depth
Spaciousness	**Complexity**	Intimacy
Coherence	Identifiability	Rhythm

Ewing, R., Clemente, O., Neckerman, K. M., Purciel-Hill, M., Quinn, J. W., & Rundle, A. (2013). *Measuring urban design: Metrics for livable places* (Vol. 200). Washington, DC: Island Press.


The life and health of all...
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‘Nature-based solutions’
UNE SEULE SANTÉ URBAINE
ONE URBAN HEALTH
École de santé publique
Université de Montréal
CReSP
Université de Montréal
UNSW
Cities Institute


Air and pollution
Land and sea use
Climate change
Globalisation and industrialisation
Food systems
Infectious and zoonotic diseases
Non-communicable diseases
Biodiversity
Plant and soil health
Urban health
Waste and sanitation
Aquatic health
Antimicrobial resistance

The challenge is to ‘synergise’

One Health



de Leeuw, E. (2021) One Health(y) Cities: Cities are pandemic ecosystems and that’s where the action ought to happen. *Cities & health*, *5*(sup1), S26-S31.

Healthy Cities



De Leeuw, E. (2022) One Urban Health. https://www.urbanet.info/one-urban-health/

The Sustainable Development Goals:



(Healthy) Cities *are* SDGs:



A clean, safe, high quality physical environment (including housing quality).

Access to a wide variety of experiences and resources with the possibility of multiple contacts, inter-action and communication.

An ecosystem which is stable now and sustainable in the long term.

A diverse, vital and innovative city economy.

A strong, mutually supportive and non-exploitive community.

Encouragement of connectedness with the past, with the cultural and biological heritage and with other groups and individuals.

A high degree of public participation in and control over the decisions affecting one's life, health and well-being.

SUSTAINABLE DEVELOPMENT GOALS

A city form that is compatible with, and enhances the above parameters and behaviours.

The meeting of basic needs (food, water, shelter, income, safety, work) for all the city's people.

High health status (both high positive health status and low disease status).

An optimum level of appropriate public health and sick care services accessible to all.

Three urban health examples

- The Eco-corridor
- The Precinct
- The Aerotropolis

Eco-corridors and acupuncture

The Argument

Life, health and wellbeing in cities is enhanced by strategically developed (and maintained) connected grids and corridors of biodiversity. This leads to cooler canopies, more diverse urban macrobiomes and gut microbiomes, more happiness, less allergies and greater resilience.

The Evidence

Abundant evidence provided by ecologists, biologists, social sclentists. Hard to establish singular monocausal epidemiological patterns, although '*access to nature correlates with better health*'. Politically, nature and biodiversity in cities are hot potatoes ('*veggies 'n' verges*').

The Consequence

Concrete, impermeable surfaces, cars and trucks win

Ulm, K., Morrow, O., de Leeuw, E., Sanderson, D., & Thornton, A. (2026). Urban gardening in public space: Policy approaches in Greater Sydney. Urban Studies, 63(5), 932-948.

Schirone, B., Pica, A., Fratini, F., Menegoni, P., & Cianfaglione, K. (2025). Miyawaki and urban tiny forests in Italy. *Earth*, *6*(4), 116.

Precincts and technopoles



The Argument

The concentration of high-tech hospitals, patient care, R&D establishments, pharma business and educational facilities (universities) will benefit the health of the population.

The Evidence

Health (care) precincts almost exclusively serve capitalist objectives. Overall population health does not improve, although single patients may benefit. Costs will not be reduced. For technopoles generally: they will only work with rigorously maintained governance and coordination

de Leeuw, E. (2023) Precincts and Promises. 347–365 In: Biloria N., Sebag, G. & Robertson, H., eds. (2023) The Empathic City. An Urban Health and Wellbeing Perspective. Springer

Urban Truth Spots:
Canberra (Australia – 1912), Naypyidaw (Myanmar – 2002), Putrajaya (Malaysia – 1990s), and Nusantara (Indonesia – 2019)
As per
Bunnell, T., Aung-Thwin, M., Clendenning, J. N., Goh, D. P., & Smith, N. R. (2022). Points of persuasion: Truth spots in future city development. Environment and Planning D: Society and Space, 40(6), 1082-1099.

The Consequence

Health / Care / Innovation Precincts continue to be built to fail for peoples' wellbeing

Flying away: *Healthy Airports*

The Argument

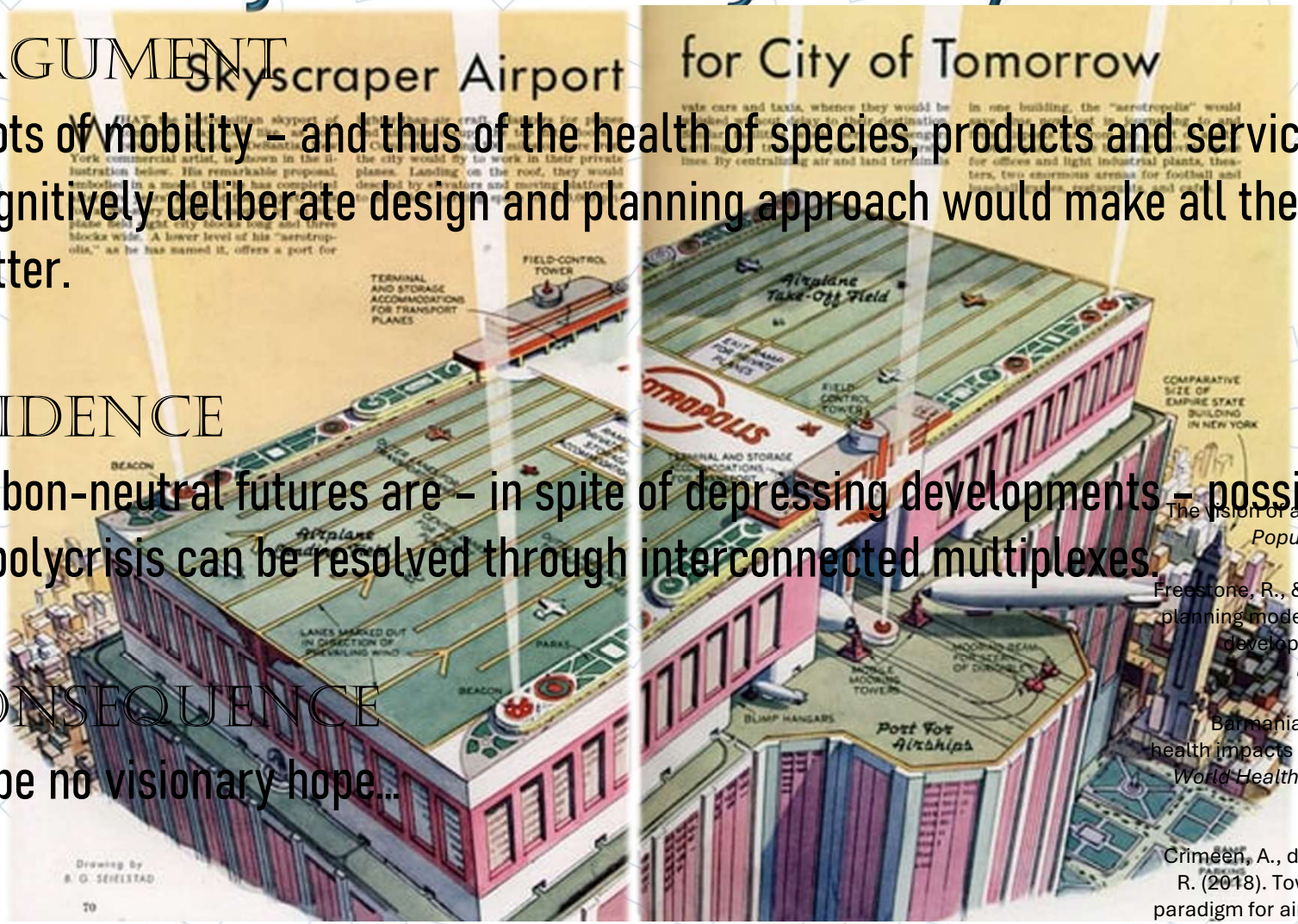
Airports are pivots of mobility – and thus of the health of species, products and services. A spatially and cognitively deliberate design and planning approach would make all their communities better.

The Evidence

Sustainable, carbon-neutral futures are – in spite of depressing developments – possible and necessary. The polycrisis can be resolved through interconnected multiplexes.

The Consequence

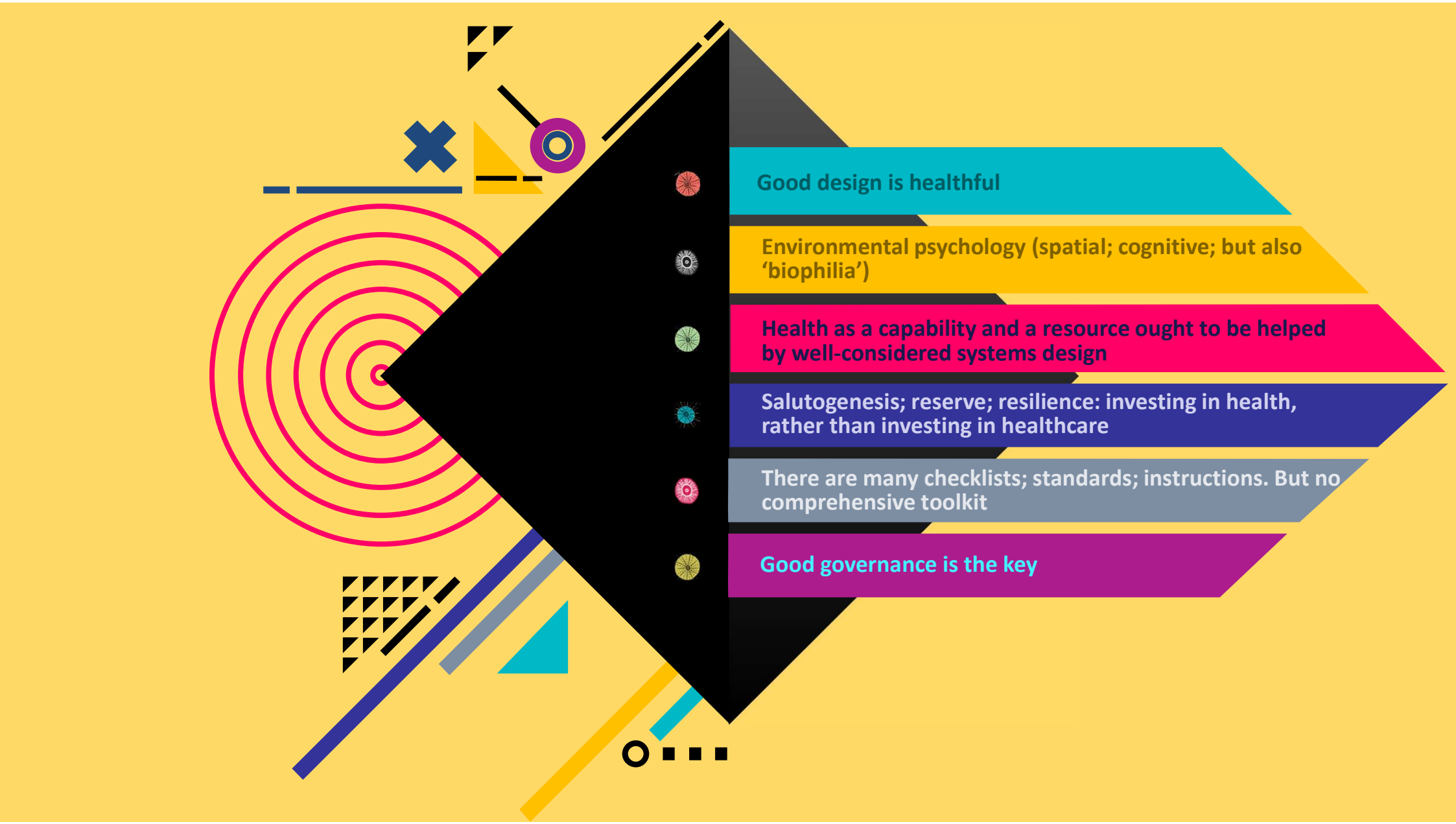
There seems to be no visionary hope...



The vision of artist Nicholas deSantis in *Popular Mechanics (1939)* , as referenced in Freestone, R., & Baker, D. (2011). Spatial planning models of airport-driven urban development. *Journal of planning literature*, *26*(3), 263-279.

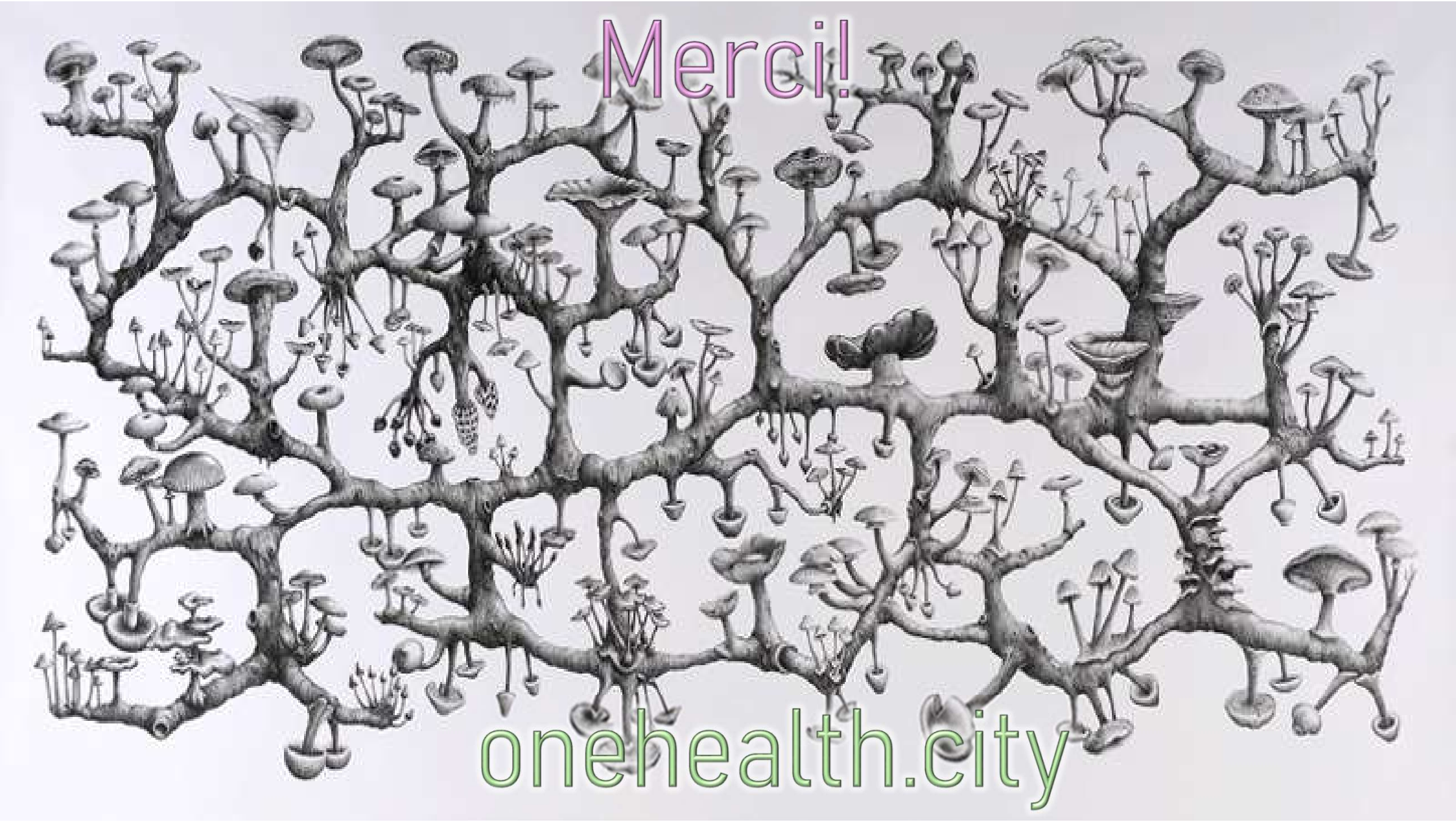
Barmania, S. (2018). Improving the health impacts of airports. *Bulletin of the World Health Organization*, 96(8), 518-519.

Crimeen, A., de Leeuw, E., & Freestone, R. (2018). Towards a health promotion paradigm for airport development. *Cities & Health,* 2(2), 134-142.


Good design is healthful
Environmental psychology (spatial; cognitive; but also ‘biophilia’)
Health as a capability and a resource ought to be helped by well-considered systems design
Salutogenesis; reserve; resilience: investing in health, rather than investing in healthcare
There are many checklists; standards; instructions. But no comprehensive toolkit
Good governance is the key

Good governance is the key




Merci!
onehealth.city