Spring School

Carla Hyenne

April 8, 2022

Contents

What are circular cities?

Nele

Cradle to Cradle, Michael Braungart

Moving from a **linear economy** (natural resources are taken, made into products, disposed as waste) to a circular economy where the economy model is **regenerative** and nothing is waste. This idea has a transformative potential, requires rethinking and remaking everything.

Going from the circular economy to the **circular city** - applying circular economy principles to the city. Many European cities have declared themselves to (try to) be circular.

Examples:

- Amsterdam's doughnut economy: small 'doughnut projects' in the city, like making curtains from waste material, amount to a greater doughnut economy
- Refill coffee cups throughout the city
- London (and other): felix project, taking surplus food to restaurants/supermarkets and distributing to homeless shelters; or food tickets at participating restaurants
- Local currencies: currency that can only be spent in local businesses
- Recycling NGOs in Sao Paolo's favelas: they purchase waste with local currency to be reused in local businesses
- India: tobacco buds recycled into teddy bears
- Amsterdam De Ceuvel: generating natural energy, recycling the waste generated in the cafe into the local farming field to grow food to be reused in the cafe, compost toilets
- Amsterdam Schoonschip: creating holistic floating buildings, components with low environmental impact, sharing transport

Criticism

- The circular economy is based on a growth paradigm and ecological modernisation, but the point should be to decouple economic growth from resource consumption.

- There is a dominance of techno-centric and corporate-led narratives and strategies.
- There are limited and unclear contribution of the circular economy to environmental and social dimensions.
- Limited participation of urban dwellers in the circular economy, because the urban is different from an economy

Circular economy vs. Circular city

How are urban systems different to economic systems in the context of circularity?

- The urban is not an economic system: focus on production of goods vs. consumption of goods and services
- Scale: national and international governance vs. local government
- Spatiality and embeddedness: urban is place bound, processes are embedded in the specific complex context - but economy doesn't account for this
- Land and infrastructure: resources that are neglected in CE
- Urban and rural connection: urban uses the rural to produce goods necessary for the city, but the urban does not control the rural directly even though the city decisions influence the rural - conflicts?

→ Need for socio-ecological focus for the circular city (**williams2021circular**)

'Products as a Service': you buy a service, not a product - you buy 'washing your clothes 2000 times, not a washing machine', and when the lifecycle of the good is over, it is returned to the manufacturer who deals with its disposal, thus has an incentive to create a high-quality product that can be easily regenerated.

Transdisciplinarity

In the context of circular cities... it is required because of the complexity, scales, dynamics of circular urban systems. There are diversity of actors...

The complexity of urban systems require a transdisciplinary approach to solve the contemporary challenges. There are resource conflicts, and conflicts of interest which need to be **negotiated**.

Evolution of the scientific "response"

Disciplinary, multi-disciplinary, interdisciplinary, transdisciplinary (interdisciplinarity applied to the real world/real actors), transformative research (with progress change, eg. interventions, experiments)

Urban Living Labs

-
-

Readings

***Moving from a circular economy to a circular city, in: Circular Cities: A Revolution in Urban Sustainability*, (williams2021circular)**

- Circularity is an ecological concepts, where resources are recycled, reused or recovered. Used in industrial systems, production processes (cradle to cradle), and economic systems (circular economy) but none of these have focused on *urban systems* as an area for analysis
- "Circular economy is a model for production and consumption (with an emphasis on production), whose ultimate goal is to achieve the decoupling of economic growth form natural resource depletion and environmental degradation" (p. 9)
  - Circular economy designs regeneration and restoration (of the previous damage) into economic processes
  - RESOLVE is the most use framework for circular economy in businesses, but not so applicable for the circular city
- Economic vs. Urban system - the differences: (p. 11)
  - Governed at national and international levels vs. spatially bounded, governed at local level although affected by national and international 'regulatory and economic systems'
  - Goals are economic, accumulation of wealth and capital vs. goals are about societal benefits
  - Focus on businesses or industries vs. focus on systems of production
  - RESOLVE doesn't consider that:
    - Cities are often centres of consumption, not production, which happens outside the city; the 'waste' produced in the city is thus mostly individual waste, not industrial
    - Cities have many different groups of people, with different social practices, and are highly complex social spaces
    - Scale: important to consider at which scale to intervene, neighbourhood, city, city region?
- Moving from an economic to ecological focus

  - Ecological footprint: the area of land and water required to produce the resources (goods and services) necessary for the urban system to function well (food, energy,...); it is located outside the city boundaries, and the goal of a city should be to minimise this area; Need to reduce: resources consumed AND waste generated
  - Sufficiency: self-sufficiency to increase resilience
  - Closing resource loops: reducing inefficiencies by closing resource loop, and reusing, reducing, recovering
  - Regenerative capacity: capacity to produce resources and absorb waste does not function well, and cities have to rely on increasingly larger hinterlands to sustain their population
  - Adaptive capacity: "socio-technical lock-ins to existing infrastructure and land-use patterns" prevents resources from being fully utilised, and creates waste in cities
  - Context: local politics influence all of the above

- "A circular city is a socio-ecological system, consisting of a bio-geo-physical unit and its associated social actors and institutions. It is a complex, regenerative and adaptive system, delimited by spatial and functional boundaries, surrounding an ecosystem." (p. 15). Three actions for circular city and development, to operate within **ecological carrying capacity**:
  - Looping actions: from a linear to a closed process
  - Ecologically regenerative actions: integrating blue and green spaces into urban fabric/management of urban ecosystem
  - Adaptive actions: capacity within the urban fabric to adapt to change

- "A variety of circular development pathways are likely to emerge from different urban contexts, resulting from diverse political economic, cultural, social, environmental, regulatory and technical conditions" (p. 15)

- Varying motivations for a circular city: city-marketing, exporting urban innovation, social solidarity and redistribution of resources, business development and job creation, regenerating local industry base, resource security, climate change...

***Circular economy and the city: an urban political economy agenda*, Keblowski, W., Lambert, D. & Bassens, D, 2020**

- "CE debate is biased towards technology-driven industrial change, while bracketing broader socio-political interests. We address this gap by exploring the political economy of scale in the CE"; a technology-led dematerialisation of production
- Popularisation of the CE amongst urban policy-makers, one of the key themes of the EU Urban Agenda
- Criticised by scholars as idealistic, and lacking transformative capacities in ecological and socio-economic terms (p. 143)
- A political economy of scale approach:
  - "Central in our approach is the understanding of scale as a particular set of socio-spatial relations between means of production, labour and space, strategically 'fixed' by the capitalist mode of production to organise and sustain continuous accumulation" (p. 143)
  - "Evidence from Brussels and elsewhere has shown that sustainability fixes may produce new contradictions symptomatic for neoliberal urbanism, evident in a deepening of socio-spatial polarisation, ecological or environmental gentrification of neighbourhoods, and the installation of technocratic governance structures evacuated from citizen participation" (p. 43)
- Conclusions (p. 153)
  - Need to inquire to what extent the environmental and circular discourses are acting as imaginaries to marry urban development agendas with environmental concerns
  - Need to uncover social relations and urban institutions behind the CE, the regulatory frameworks, legal configs, governance systems, role of State as key actor
  - Understand how the diversity of CE practices are specific to the socio-spatial landscape of the case city
  - Using the notion of 'urban sustainability fix' to understand how the discourse of sustainability now formulated into circularity, propagates elite interests - CE as a tool for entrepreneurship, creating employment, the buzzword 'circular' appeals to large companies and corporate interests; thus, CE plays an increasing role in urban development/renewal strategies

  - Flagship CE operations hide small scale/local initiatives by NGOs, neighbourhood co-ops, citizen groups; who can enact socio-ecological change
  - CE initiatives are diverse: in terms of their regulations, embeddedness of activities (?), labour/employment conditions, agency offered to customers and contributors

***Exploring circular economies in the built environment from a complex systems perspective*, Rios et al., 2022**

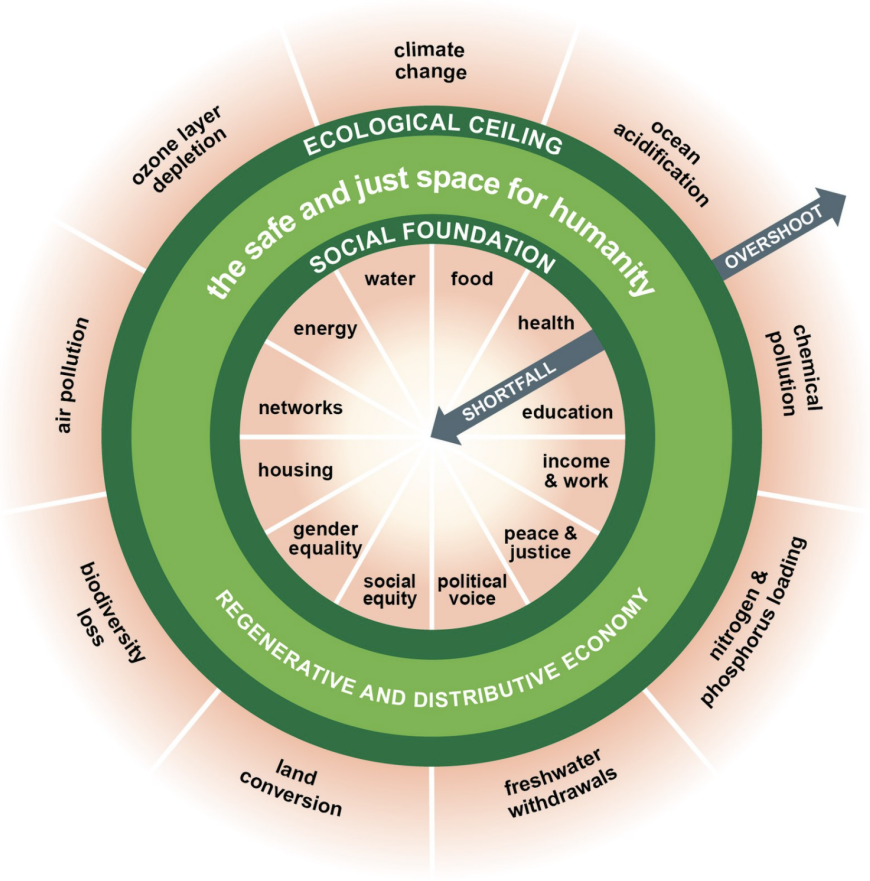
- The built environment is a leading sector in resource use and carbon emissions, thus has a major role to play in the CE. This paper analyses/reviews case studies, and find dimensions at play (governmental, economic, environmental, technological, societal, behavioural);
- ReSOLVE: Regenerate, Share, Optimise, Loop, Virtualise, Exchance
- Circularity of the built environment can be analysed at different scales, in increasing complexity:
  - Micro: building materials, products
  - Meso: individual buildings
  - Macro: neighbourhoods, cities, built environment
- Governance, justice, cultural change have been overlooked in CE: "by overlooking social considerations, CE research is proposing technological path to sustainability that many have criticised for being overly optimistic regarding the speed of technological transitions and the capacity of society to integrate disruptive innovations" (p. 2)
- RQs: what CE dimensions and disciplines are present in the built-environment literature, and which aren't? How do circular economic function in complex system that are cities?
  - Looks at interdependencies, feedback looks, elements and flows of the CE interventions in the case studies
- Conclusions: (o. 10)
  - Governmental and behavioural dimensions are the least represented; economics and decision science are least represented disciplines;

  - Societal dimension is most important for ethically designing CE interventions
  - Local community participation is important for co-creating CE interventions, and to blend top-down and bottom-up strategies/gain public support/encourage behavioural change/raise awareness of CE

***Downscaling the Doughnut to the City*, Kate Raworth, 2021**

https://www.youtube.com/watch?v=YCqGf7T9ABoLink/URL

- How can the city meet the needs of its people, so that they thrive (including food, housing, health care, education, transport, political voice, social equality) without compromising the needs of the planet? What does that look like for your city, given its geography and environmental boundaries? → **thriving people in a thriving habitat**
- Experiments conducted in Portland, Philadelphia, Amsterdam, downscaling the doughnut into a 'city portrait'
  - Amsterdam's housing: unaffordable, but housing cannot continue to be built in the same way it has been, if it is to be sustainable and respect the environment? How can housing be circular, incl. material waste, energy usage, land use, biodiversity,...
- The role of individuals to tell their stories and lived experiences ('city selfie')


climate change
ocean acidification
chemical pollution
nitrogen & phosphorus loading
freshwater withdrawals
land conversion
biodiversity loss
air pollution
ozone layer depletion
ECOLOGICAL CEILING
the safe and just space for humanity
SOCIAL FOUNDATION
OVERSHOOT
SHORTFALL
water
food
health
education
income & work
peace & justice
political voice
social equity
gender equality
housing
networks
energy
REGENERATIVE AND DISTRIBUTIVE ECONOMY