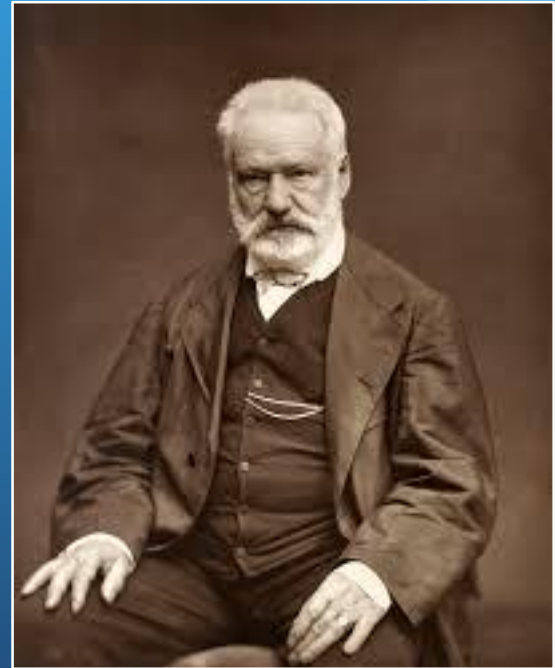


Circular Business Models: Towards a Systematic Conceptualisation

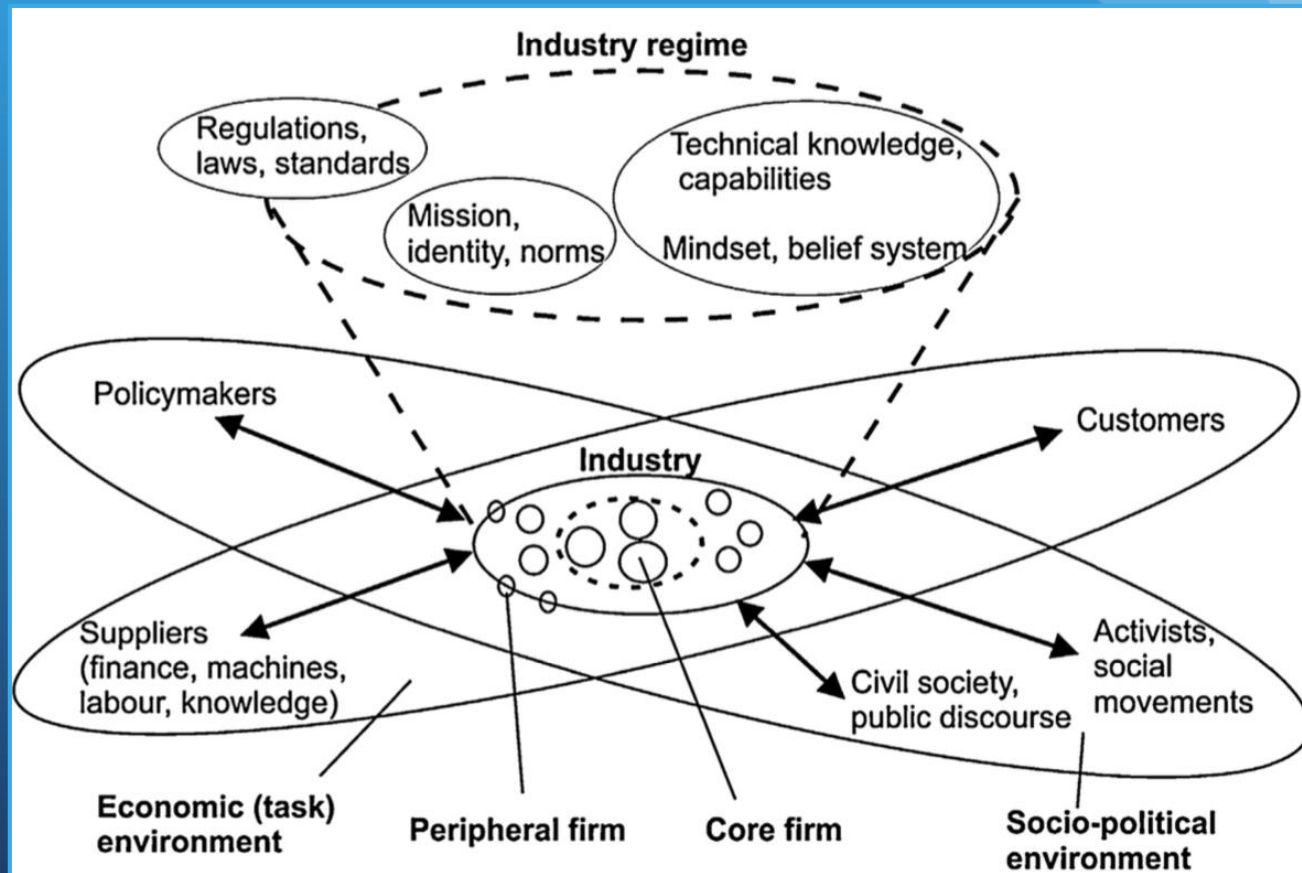
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*“Nothing in this world
is so powerful as an
idea whose time has
come”* (Victor Hugo)




“no single intervention on its own will create the tipping point for a circular economy. It is a systems problem that needs a systems solution” (Green Alliance, 2013: 28)



(Geels, 2014)

A circular economy is...

*“An industrial system that is restorative or regenerative by intention and design (...) and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, **business models**” (EMF & McKinsey, 2012: 7)*

*“Built increasingly on renewables, and the endless flow of energy from the sun (energy in surplus), a circular economy is one which transforms materials into useful goods and services (waste  food). It builds capital and maintains it (...) **It is led by business for a profit** within the ‘rules of the game’ decided by an active citizenship in a flourishing democracy” (Webster, 2013: 542-543)*

CBMs in the literature

“In recent years, circular business models have received attention from practitioners, policy makers and researchers. However, despite the increasing use, no common understanding of the concept has been established” (Nußholz, 2017: 1)

CBMs constructs

- ❖ CBMs elements (e.g. EMF & McKinsey, 2012);
- ❖ CBMs categories (e.g. Circle Economy, 2016; Lacy & Rutqvist, 2015; Weetman, 2017);
- ❖ CBMs canvasses (e.g. EMF & IDEO, 2017; Lewandowski, 2016);
- ❖ CBMs framework (e.g. Antikainen & Valkokari, 2016);
- ❖ CBMs strategies (e.g. Bocken et al., 2016);
- ❖ CBMs archetypes (e.g. Forum for the Future, 2016; Moreno et al., 2016).

The business model

A business model describes “the rationale of how an organization creates, delivers and captures value” (Osterwalder & Pigneur, 2010: 14)

Value Proposition

- 1) Product/service offerings
 - 2) Customer segments, and
 - 3) Customer relationships
- (What value is provided and to whom)*

Value Creation & Delivery Systems

- 4) Activities, 5) Resources,
 - 6) Partnerships and suppliers, 7) Distribution channels.
- (How value is provided)*

Value Capture Mechanisms

- 8) Cost structure,
 - 9) Revenue streams
- (How the company makes money from providing value)*

A business model framework (based on Osterwalder et al. [2005]; Richardson [2008]).

The ReSOLVE framework

EXAMPLES

REGENERATE



- Shift to renewable energy and materials
- Reclaim, retain, and restore health of ecosystems
- Return recovered biological resources to the biosphere



SHARE



- Share assets (e.g. cars, rooms, appliances)
- Reuse/secondhand
- Prolong life through maintenance, design for durability, upgradability, etc.



OPTIMISE



- Increase performance/efficiency of product
- Remove waste in production and supply chain
- Leverage big data, automation, remote sensing and steering



LOOP



- Remanufacture products or components
- Recycle materials
- Digest anaerobic
- Extract biochemicals from organic waste



VIRTUALISE



- Books, music, travel, online shopping, autonomous vehicles etc.



EXCHANGE



- Replace old with advanced non-renewable materials
- Apply new technologies (e.g. 3D printing)
- Choose new product/service (e.g. multimodal transport)



The conceptualisation of the CBM

BMs Components	Qualifying Features of BMs Components in a CE
<p>Value Proposition (Customers' offering)</p>	<p>P₁: Enhanced customers' value as a result of more comprehensive 'circular offerings' (e.g. products as services; greater convenience; dematerialised products; superior product durability and ecological performances; product upgradability; take-back schemes) and 'circular relationships' (access over ownership, e.g. leasing, renting, sharing).</p>
<p>Value Creation & Delivery (How value is created and delivered)</p>	<p>P₂: Diffused value creation, maximisation of resources value across the activity system, local/regional supply chains and boundary spanning relational competences for the adaptation or development of 'circular' resources and capabilities.</p>
<p>Value Capture (Costs & revenues)</p>	<p>P₃: Idiosyncratic value capture mechanisms.</p>

Circular business models are business models wherein enhanced customers' value is produced as a result of more comprehensive 'circular offerings' (e.g. products as services; greater convenience; dematerialised products; superior product durability and ecological performances; product upgradability; take-back schemes) and 'circular relationships' (access over ownership, e.g. leasing, renting, sharing). In circular business models diffused forms of value are created, local/regional supply chains are implemented, maximisation of resources value across the activity system is pursued, boundaries spanning relational competences for the adaptation or development of 'circular' resources and capabilities are developed, and idiosyncratic value capture mechanisms are observed.

(De Angelis, 2018)

Future lines of enquiry

- ❖ Conceptual development: more divergence than convergence in the CE literature;
- ❖ Theoretical development: the CE literature is emerging as a-theoretical;
- ❖ Empirical development: there is limited availability of case-based research.

Thank you for listening

Any questions?

Dr. Roberta De Angelis

Kaer, a Singapore-based company, offers air-con as a service. By doing so it takes responsibility for the design, installation, and effective running of the air-conditioning system. It also optimises how the system runs because of IoT data sensing and analytics. As a result, clients benefit from lower energy consumption (up to 70%) and operating costs (by 10 - 20%). Buildings carbon emissions are reduced and *Kaer* enjoys better customers' relationships (EMF, 2018).

Rede Asta, a Brazilian network of cooperatives, collect waste materials and unused equipment from hundreds of companies across Brazil. Relying on a network of female artisans, *Rede Asta* offers bespoke design to those companies to help them using wasted materials for specific marketing purposes. By doing so this initiative contributes to mitigate serious ecological and social national issues. Notably, the vast amount of materials sent to landfill, women exclusion in the workplace which is still very diffused in Brazil, and it supports entrepreneurship among low-income female workers (EMF, 2018).

British Sugar generates 25% of its revenues from non-core, profitable product lines by using waste streams from its sugar production. Particularly, it now produces liquefied CO₂ for soft drinks, animal feed, topsoil for landscaping, aggregate for building, betaine for the cosmetics industry, soil conditioner, speciality tomatoes, bioethanol, and electricity fed into the national grid (Short et al., 2014).

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