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A 'Storytelling Science' Approach Making the Eco-Business Modelling Turn

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Abstract

Purpose: To develop a transdisciplinary approach called eco-business modelling.

Design/Methodology/Approach: The first step is an analysis of the ways triple bottom line and circular economy emplotments have colonized and co-opted the United Nations and European Union Agenda 2030 initiatives by privileging business-as-usual scenarios. The second step is to construct a storytelling approach model to business modelling. The third step is to propose a 'self-correcting' storytelling science method to make the transition from the contemporary business-as-usual model to eco-business modelling.

Findings: The challenge is to create comprehensive ecological business models that foster worst-case and best case scenario comparisons with status quo business-as-usual.

Originality Value: We propose that business modelling is about storytelling, making 'bets on the future' scenarios, and we propose a 'five worlds of storytelling model' business modelling.

Research Implications: The contribution is to propose a 'self-correcting' storytelling method of iterative, 'crossover storytelling conversations' as a way of developing collaborative 'interdisciplinary learning' across specialized business model disciplines.

Practical Implications: We call for crossover conversations that challenge the unintended consequences of the triple bottom line and circular economy business models.

Social Implications: With ozone depletion, climate change, natural resource depletion, loss of biodiversity and habitat, there are pressures to develop ecologically sensitive business models.

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A 'Storytelling Science' Approach Making the Eco-Business Modelling Turn

Approaches to sustainable business modelling have been dominated by triple bottom line (3BL) and circular economy (CE) approaches to shape what is called corporate environmentalism (Linstead and Banerjee, 2009). Therefore, they reduce the context of sustainable business modelling to a matter of customer value, profit, and market opportunities. Thus, a real turn to eco-business modelling in which nature matters as much as profit, costs, revenues, and growth has been co-opted, colonized, and obscured by corporate environmentalism that serves the PR purposes of greenwashing rather than actual moves to limit ozone depletion, global heating, natural resource depletion, and loss of biodiversity and habitat. Such shallow forms of sustainable business modelling preserve and perpetuate a non-ecological business modelling logic. Critics have argued that they can also colonize areas of Third World social life that are not yet ruled by the logic of the market or the consumer and violate forests, water rights, and sacred sites (Banerjee, 1999: 9; Escobar, 1995; Visvanathan, 1991).

In this paper, we suggest a more holistic and grounded eco-business modelling approach, which we construct through storytelling and storytelling science. This approach answers our research question: How to begin an ecological turn from 'corporate environmentalism to 'eco-business modelling'? We answer this question in three steps. First, we deconstruct the dominant narratives of business modelling to disclose how two corporatized environmentalism approaches, triple bottom line (3BL) and circular economy (CE), dominate and prevent a turn to eco-business modelling. Both narratives have been coming under increasing criticism for putting economic bottom line interests ahead of both equity and ecosystem concerns (Lazarevic and Valve, 2017; Milne, 2005; Norman and McDonald, 2004). We conclude that CE uses the same logic as 3BL and therefore merits the same critique. The 3BL theory tries to balance profit, people, and planet, aka economic prosperity, or by economics, equity, and environment.

Our proposed ecological approach to business modelling is based in theories of storytelling and a comprehensive ethical framework that connects business model cycles with the cycles of nature. The principle that these cycles can begin again is identified as the highest principle of all being, and it is embedded in our storytelling approach. We propose a 'five worlds of storytelling model' in order to visualize our understanding of the complex interactions between past/future and abstract narratives/grounded stories in business modelling which construct 'bets on the future' scenarios.

Second, we propose a 'self-correcting' storytelling science method to make the transition from contemporary business-as-usual model to an ecological and in the end ecological business ethics model. Iterative, crossover storytelling conversations are ways of developing collaborative 'interdisciplinary research projects' across specialized business model disciplines. These storytelling conversations are important to allow comparisons of alternative future scenarios with business models for more effective and extended risk management in which nature's cycles play an important part.

Deconstructing Triple Bottom Line (3bl) and Circular Economy (Ce)

The climate crisis has set a new agenda for 21st century strategies and business models. In 2015, members of the United Nations (UN) agreed on 17 sustainable development goals (SDG) that encompass and combine goals concerning nature, cultural, social and economic development. Partnerships for the goals was mentioned as the last one. Collaboration among actors, strong institutions, and peace were seen as important for avoiding temperatures that rise to more than 1.5-2 degrees. Climate action and policies concerning life on land, life below water, clean water, and so forth were seen as necessary for avoiding not only rising temperatures but also a decline in biodiversity, changes in land systems, loss of animal and fish populations (including commercial fish), ocean acidification, and so forth. For business and business modelling, the UN SDGs have been understood differently. McAteer (2019) argues

that sustainability is a new advantage and defines sustainability in a way which is perfectly consistent with corporate social responsibility (CSR), namely as a balance between profit, people, and planet (McAteer, 2019: 29).

This is also consistent with the narrative of globalization, which according to Latour (2018) has accompanied post-war political and economic agendas. Latour instead proposes coming down to earth through what he calls a 'terrestrial politics' that not only sustains nature's life cycles but also engenders them. His suggestion is radical and implies moving our attention from 'systems of production' to 'systems of engendering' in business modelling (Latour, 2018: 82). This new narrative entails moving attention to the multiple agencies that are entangled in the living matter that is laying between the atmosphere and bedrock in a minuscule 'critical zone' (Arènes et al., 2018) that is only few kilometers thick—"...a biofilm, a varnish, a skin, a few infinitely folded layers" (Latour, 2018: 78). This narrative of the Terrestrial is directly opposed by an out-of-this world climate denial narrative (i.e., Latour, 2018) supported financially by major corporations and of course Donald Trump.

To return to the ground is to extend Arendt's (Arendt, 1998: 12–15) notion of natality to all living beings such that all these Terrestrials, among which we humans are only one, have reasonable possibilities to not only recreate themselves but also to flourish and appear as beautiful and unique creations among diverse and multiple beings. This entails seeing 'nature as a process' instead of 'nature as a context' for our actions (Gleason, 2019; Latour, 2018). Moving towards such systems of engendering is a huge challenge for business modelling. Contemporary approaches to business modelling, also those that claim to be sustainable, are firmly embedded in a systems of production approach.

29th July was Earth Overshoot Day, the calculated day when humanity's resource consumption exceeds Earth's capacity to regenerate those resources that year. In 1987, the Earth Overshoot Day was 23rd October. In 1970 it was 29th December. The Earth Overshoot Day for Denmark was March 29 in 2019. For USA it was March 15th. While the Earth Overshoot
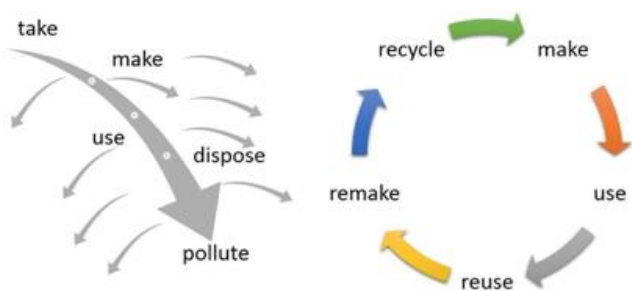
Day is a very rough estimate, it does tell a story of the mismatch between contemporary material practices, including business models, and the cycles of nature. Perhaps the Earth Overshoot Day even paints a more optimistic picture, since scientists all over the world have been claiming that we currently are living through a 6th mass extinction event.

Businesses in Denmark and all over the world have embraced the UN SDGs. Or have they? The UN SDGs have actualized a renewed interest in corporate social responsibility and their proposal of a balance between profit, people and planet (Vallentin, 2011), i.e., 3BL. Furthermore, CE has been emphasized as the new economic concept that would save the planet from resource depletion. Thus, it is narrated that if we can just recycle, then there would be no need or at least less need for the planet's resources. However, we suggest that 3BL and CE combined is a narrative hoax designed to keep the relations of production and consumption going at the same pace of business-as-usual scenarios. This has been observed by several authors such as Valenzuela and Böhm, among others.

"Given the all too obvious social and environmental crises associated with out-of-bounds growth capitalism, the circular economy has been one of the main references for rebuilding and reforming a political economy of sustainable growth" (Valenzuela and Böhm, 2017: 23).

Today 3BL and CE have interpenetrated ideas of sustainable business modelling and are endorsed by the UN (see for example Business & Sustainability Development Commission, 2017) as well as the EU (see for example European Commission, 2018). One is translating its concepts into the other, while watering them down so they do not address the complexity and breadth of problems of climate change, global warming, and what most scientists predict as catastrophic consequences of business-as-usual approaches. From a storytelling standpoint, this includes the ways that the business models' chronotopes are coming into alignment. Chronotopes (Bakhtin, 1981) are the spacetime emplotments of their respective narrative events unfolding into the future. Emplotment is central here in denoting how

people transform and reorganize events in a story and thus insert themselves into history through processes of interpretation and action (Rhodes & Brown, 2005; Young-Bruehl, 1977). Such emplotment is embedded in human constructs which include concepts, theories, and models. Both sets of chronotopes in 3BL and CE respectively lack the deep ecology standpoint to be of much use in achieving the UN Agenda 2030 limit of 1.5 degree C average earth temperature increase. CE is usually seen as a sustainable alternative to the linear model of economy as illustrated by Weetman (2016).

Figure 1: Contrast of Linear Economy Model to Circular Economy (CE) Model

We suggest that CE is a counternarrative that needs deconstruction because it reduces ecosystem stewardship to just an economic bottom line. In short, CE is constituted as a solution to the business of 'sustainable development, which is itself a watered-down version of deep ecology and is an example of 'corporate environmentalism'. It is a weak appropriation with substitutions of economic prosperity and continued growth of the linear economy that CE purports to move away form. There are few published critiques of CE (see Valenzuela and Böhm, 2017). Geissdoefer, Savaget, Bocken, and Hultink's (2017) review of the merger of business modelling with the circular economy focuses on areas of attention such as closed loop value and supply chains (Guide and Van Wassenhove, 2009; Wells and Seitz, 2005; Govindan et al., 2015; Stindt and Sahamie, 2014), circular business models and product design (Bocken et al., 2016).

Our argument is that the 3BL and CE chronotopes need to be more long-term and more terrestrially grounded to be effective. Nature consists of multiple ecological systems and critical zones (i.e., Arènes et al., 2018; Jørgensen et al., in review; Latour, 2018) which are exacerbated by temperature increase (Boje, 2019). The earth is approximately 4.5 billion years old, and in the span of their 140,000 year existence, humans have managed to disrupt the climate, raising its temperature about 1 degree C since the industrial revolution. If the existence of the Earth were reduced to 24 hours, humankind would have existed only three seconds. The extinction of animals is now 1,000 times the natural background rates. Both CE and 3BL are for putting profit/economics ahead of people/equity and planet/environment. They may contribute to slowing down the pace of climate changes but will not stop them. CE and 3BL have robust measures of profit/economic variables but not much on the people/equity or planet/environment, and this supports our argument.

The premise of CE is that there is a set of boundary conditions that ensures that all activity translates to contributing towards a positive impact for 3BL, profit, people, and planet (aka economic, equity and environment). The business modelling logic of CE can be as profitable as it has been in the linear model of grow now, clean up later. Focus is still on short-term gains at the expense of long-term externalities. While it is possible to somewhat reduce, reuse, and recycle, the circular economy, in its circularity, is all about economy and development without limits to growth. CE is then rather traditional in following the same kind of growth-mania economics, which keep placing more demands for additional natural resources and evermore growth, and it does not account for exceeding nine planetary limits on the carrying capacity for all life on planet Earth (Rockström et al, 2009).

As an example, CE puts eco-business modelling (Pateli and Giaglis, 2004) within economic logic. Lewandowski (2016) offers the critique: "existing business models for the circular economy have limited transferability and there is no comprehensive framework supporting every kind of company in designing a circular business model." A limitation is that Lewandowski tries to translate business model concepts, such as the value proposition, as a core component of the circular business model and extend how the circular value proposition offers a product,

product-related service, or a pure service. A problem with such an approach is that it does not address the myopic approach of the circular economy itself and its reductionism of climate changes to product design, component reuse, and recycling. Bakker et al. (2014) consider circularity as absolutely necessary for sustaining economic output, but they do not give equal attention to ecosystem or equity. Next, we will begin constructing a new eco-business modelling approach based on storytelling and storytelling science. We will begin by discussing relations between storytelling and business modelling.

Storytelling and Business Modelling

A business model is a description of the value a company offers to one or several sets of customers. This means developing and adopting business models with strategies that have a positive economic, social, and environmental impact, i.e., 3BL. Joyce and Paquin (2016) extend the original 3BL model by adding two layers to economic development: an environmental layer based on a lifecycle perspective and a social layer based on a stakeholder perspective. As with earlier versions, Joyce and Paquin (2016) place the economic development over and above the equity (social) and the ecology (nature) layers. Rather than continuing business-as-usual modelling through 3BL and CE, we suggest ecological business modelling needs to partner with more contextual and relational business storytelling by reframing market competitive dynamics as a much wider geological and longer term sustainability-ethics shift (Agrafioti and Diamadopoulos, 2012). We thus suggest that business models are all about storytelling in that they can be seen as chronotopes that integrate diffused and differentiated activities and events unfolding in different time-spaces. Such chronotopes include the usual business modelling questions.

- How are key components and functions, or parts, integrated to deliver value to the customer?
- How are those parts interconnected within the organization and throughout its supply chain and stakeholder networks?
- How does the organization generate value or create profit through those interconnections?

The chronotopes embedded in business models can be more or less complex. Corporations seek to enact complex chronotopes through integrating activities in many diffused and differentiated time-spaces. For understanding the complexities involved and for using storytelling to make a move towards eco-business storytelling, we need to distinguish between the different ways in which storytelling works. Three characteristics of storytelling need to be discussed: storytelling as sensemaking, politics, and how storytelling relates to sustainability.

Storytelling and sensemaking: Antenarrative, living story, and narrative

First, storytelling is important for sensemaking and meaning-making in business modelling. Boje (1991) argues that storytelling is the dominant sensemaking currency in organizations. Storytelling is thus essential for the motivation to enact business models in practice and for the communication and coordination among actors participating in the business model's value chain. We can further distinguish between three different modes of storytelling as sensemaking. Business modelling is about storytelling by making "antenarrative bets on the future' (Boje, 2001; Boje, Haley and Sailors, 2016; Vaara and Tienari, 2011). Antenarrative is a story of the future. Business model canvas and other methods and concepts are all designed to produce and support antenarrative future-scenarios.

Business modelling is about storytelling in that the socio-material enactment of business models relies on living stories which emerge spontaneously through the situated, collective, discursive, and material interactions between people (Boje, 2001, 2008; Jørgensen and Boje, 2010; Jørgensen and Strand, 2014; Strand, 2012). Living stories constitute the present and involve the techniques, systems, procedures, and competences through which business models are to be enacted in practice. Business storytelling is about storytelling in producing or at least embedding stories from the past. This interpretation of the past can be more or less institutionalized in stiffened or petrified narratives: a dominant linear

and undisputed account of what the organization's business is, how it was created, and so forth (Boje, 2001, 2008; Czarniawska, 1997). Such retrospective sensemaking (Weick, 1995) is about the past and is often used to describe the organization's identity, which should be materialized in the business model.

Storytelling as Politics

Second, storytelling is important for the 'politics of business modelling'. This politics signals that actors, who are at the same time acted upon, enact business models in time-spaces. In practice, this means that business models are continuously shaped and reshaped through potentially complex interactions in many different time-spaces. As a chain of interactions, business models are storied and re-storied by many different a actors. Storytelling is never merely a matter of sense- and meaning-making but an aspect of the between-ness of actors in which a variety of different private and public interests are always problematically in play (Arendt, 1998; Jackson, 2013; Jørgensen, 2020). Business models are spatial practices whose outcomes are responded to by stakeholders and shareholders and which feed back into business models. Three different parts of the politics of storytelling are of interest in business modelling: appearance, mobilization, and negotiation.

Business modelling is about storytelling in terms of how organizations appear before the shareholders, stakeholders, and society. An important aspect is how the story of the business model is perceived and how that influences the value of the business model (i.e., market value, future expectations, and attractiveness of the organization to customers, suppliers, investors, new leaders, new employees, and so forth). A bad story can be devastating for an organization. Non-sustainable and non-ethical business models become bad stories and can influence all of the other business models in an organization.

Storytelling is essential for business modelling in that a good story mobilizes and collects stakeholders and generates resources. As an 'act of love ' (Sandoval, 2001) a good story can mobilize both internal and external actors inviting them to be part of the story. In contrast, a business model without a story is no

business model at all. Finally, storytelling as politics makes evident that business models are the results of negotiated relationships between stakeholders across time-spaces. All actors in the business model seek to generate value from the business model and satisfy their interests.

Storytelling and Sustainability

Storytelling is also about sustainability. Arendt suggests that storytelling is the means by which people become reborn again in action. She identified this principle as natality (Arendt, 1998: 176-185) but only applied it to humans (Totschnig, 2017). However, she submitted natality to what she identified as the highest principle of beings, namely eternal recurrence (Arendt, 1998: 97). Latour, as noted before, reconfigures the human as a Terrestrial with the intention of dissolving the duality of human and non-human actors. We are Terrestrials among many; we are parts and rely on the entanglement of multiple agencies contained in the topsoil, water, air, forests, lakes, plants, and other animals. We are part of how multiple species translate and rework life and our life and our aliveness physically, materially, spiritually, and culturally. We rely on what Haraway (2016: 10) calls 'multi-species storytelling'. The point is one of fundamental interdependence on the eternal recurrence of the multiplicities of species and life forms, but also societies and communities. Business modelling is part of communities' and nature's life cycles and depends on them.

Terrestrial politics (Jørgensen, Svane and Boje, forthcoming) is thus a 'politics of natality' (Vatter, 2006) extended to all Terrestrials in ways in which sustainability is not only a question of survival and reproduction but of flourishing. In other words, sustainability is not only a question of keeping nature alive at the minimum level required, but it is a question of allowing nature to unfold and live for the good of all Terrestrials. A transition from business models to eco-business models is accomplished in a deep and pervasive sense when the politics of natality becomes embedded in all processes and relations and becomes grounded in ecosystem constraints and biophysical realities. In this way, business modelling becomes not only a matter of eco-efficiency but also of viable logistics and supply chain relationships. Eco-business

modelling practices sustainability without exceeding the planetary limits of the Earth's ecosystems.

Sustainability storytelling within business modelling implies extending the 'the bets on the future' and develop business modelling scenarios of planet and people without falling into hyperbole or clinging to the status quo scenario, the 'only bottom line is profit' trap of business model value creation.' The current state of 'storytelling science' is dominated by 'status quo' business model theories, methods that lack interdisciplinary collaboration, and interventions that produce status quo scenarios that, we contend, do not go far enough or fast enough to keep up with global climate change. It is the storytelling business culture that drives the business modelling's geographical and temporal horizons. When Corporate Social Responsibility (CSR) is framed as a mainstream business 'climate change' strategy, it then expresses concerns for its geo-economic and long-term value chain rather than being reduced to short-term ways to maximize Net Present Value (NPV) and Return on Investment (RIO). Storytelling can play a crucial role in strategy and achieve a different value proposition in its business modelling by integrating contextual, relational, and extensive temporal horizons into the firm's business culture and transorganizational partners.

This transorganizational and geo-ecological horizon addresses longer term social and ecological problems of the firm's sustainability. For businesses to address climate change requires a change in the foundational storytelling and sensemaking apparatus as well as change in the political relations between organizations and its stakeholders at a deep business culture level, a change which extends throughout the transorganizational supply chain. This ethical approach to storytelling diffuses accountability to space, time, and matter throughout the enterprise. The next section presents a five worlds of the storytelling model that can be used to analyze and demonstrate the dynamics of eco-business modelling and which can help enact eco-business models in practice.

Five worlds of storytelling

Storytelling is often prompted by some crisis or loss of ground in the relations that persons or organizations

have with the world (Jackson, 2013: 37). Storytelling thus involves re-storying experiences by constructing, relating, and sharing stories to restore viability. The turn to eco-business modelling from business-as-usual-modelling is initiated by such a crisis in the relations between organizations' business models and the terrestrial conditions on which they stand. Thus the storytelling model is by no means a model for surface change but involves deep pervasive re-storying. The 17 UN SDGs are ethical markers that require re-storying business models in ways that integrate both sensemaking, politics, and sustainability. Figure 2 below brings together narrative, antenarrative, and living story together in a five world storytelling model. The figure visualizes the complex relations between narratives, antenarrative, and living stories as well as between the past and the future involved when re-storying business models.

The deep challenges concerning new eco-business modelling are that such modelling implies building from the Terrestrial principles of interdependence, multiplicity, and groundedness. As a consequence, the CSR pyramid (Carroll, 2016) for managing responsibility is reversed. Climate is first, society second, and economy third (Jørgensen & Boje, 2020). Re-storying business models towards eco-business models involves such reflections and actions concerning how our business models can connect with these goals. We do not expect it to be easy. It is hard to do the right thing. Business models can be complex and extended in time and space across many different legal, social, and economic contexts. They are held together by a complex set of relations that spans across organizational, institutional, and national boundaries. Changing business models involves negotiations between the organization and the stakeholders which impact the perceived value of the business model (is the business model legitimate), the motivation of employees (do the employees find it meaningful to work in the organization), the organization's employer brand (what kind of employees can the organization attract), and the organization's brand in general (is the organization an attractive collaborative partner). Such political processes as well as the ethical principles which they are submitted to are parts of the complex interplay illustrated by the five worlds of storytelling model.
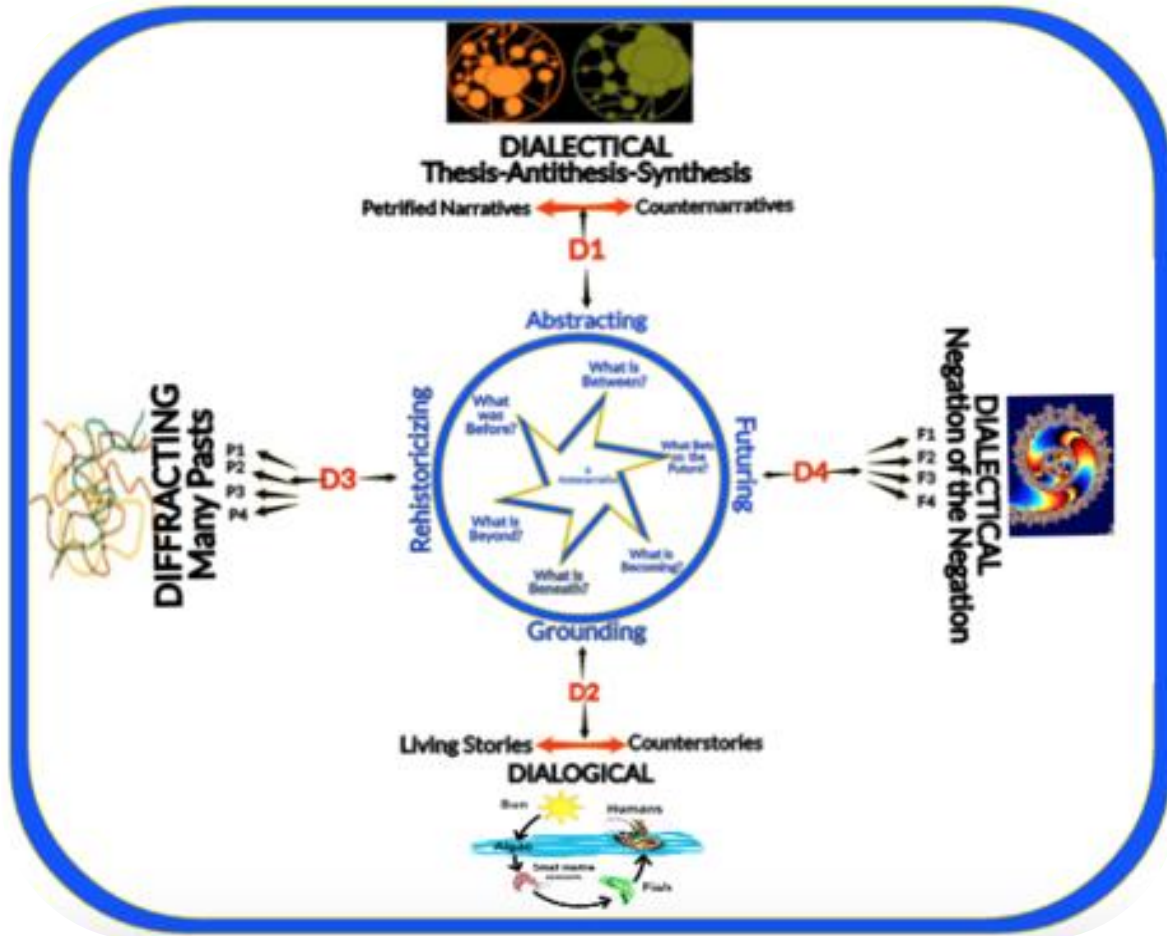
Figure 2: Five Worlds of Storytelling Theory

The five worlds of storytelling are organized around 'the antenarrative' which contains the dynamics that shape future possibilities. This dynamic contains the 'Abstracting' (petrified narrative-counternarrative) world (top), the 'Grounding' (living stories-counterstories) world (below), the 'Rehistoricizing' (diffracting many pasts) world (left), and the 'Futuring' world (Negation of the Negation)(at right).

Antenarrative world is all about processes that are constitutive of the other worlds. Every re-storying process involves exploring and re-storying the relationship with the past and the future and the relationship between the abstract and the grounded. With the ecological crisis of business modelling, there is a need for re-storying the relationship with the past, given that water, CO2 emission, plastic, waste, and resource depletion were not at the center of attention in the past. For instance, this involves re-storying business relations with natural and material geographies. Water, air, waste, or resource depletion are stories and material conditions that diffract the contemporary business modelling stories and create a need for the organization to re-invent its identity and hence its past and its future. Boje, Svane and Gergerich (2016) and Boje and Rosile 2020) have come up with six questions that can help sort out the antenarrative world. These questions are summarized in Figure 3.

The abstracting world tries to fit history into a mold, a plot, a scenario. It's political, and it ignores a lot of the living story world to make this happen. There is never a retrospective narrative, looking backwards at the past, without a bunch of counternarratives sprouting up to take issue with the grander more
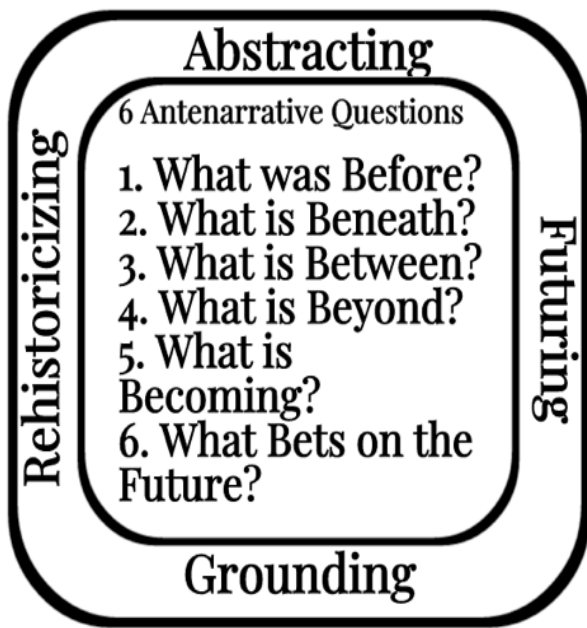
Figure 3: The Six Antenarrative World Questions

'petrified' narratives. Petrified narratives are at the level of an organization, a culture, a nation, United Nations, and so on. The Narrative-Counternarrative World is in a dominating relationship to the Living Story World. We are against it. Narrative-counternarrative (N-CN) is too 'abstracting', missing all the salamanders, all of the important relations of life itself, all of the family dynamics, and the relation of humans to nature. The abstract is a business-as-usual strategy: top-down, far-away, and blind to the relational dynamics that make places and spaces. Often the abstract is squeezed into a simple beginning, middle, and end 'emplotment' that cuts across time-spaces and severs life-worlds in the most violent fashion. What N-CN worlds need to do is more 'grounding' and less 'abstracting'.

In the grounding world, we ground our living stories in relation to others (people and organizations) and with nature. Living stories are always multiple, we can never tell just one; always interrupt to tell another and then one more after that. A living story has a place, a time, and a mind all of its own, because a living story is an aliveness. Living stories include the untold stories of what we choose not to pay attention to but is happening all around us in the foreground, background, and in-between. We live and are aware of the sights, sounds, smells, touches, and

tastes around us, and at other times, we are completely oblivious to how inseparable we are from nature, how we are part of nature, and how we change nature by our actions. We are therefore complicit in climate change. We suggest that eco-business modelling implies resituating the relationship between the abstracting and the grounding in a way in which grounding takes center stage while abstracting must be reduced to a minimum. Grounding involves 'rooting' business models in terrestrial conditions. Through restorying, the attempt is to emplace business models in the variable critical zones with which these business models become entangled. When business models become extended across time-spaces, we need to re-story the meaning from these different grounds. Otherwise, we as well as our business models lose our ground and place in the world.

The rehistoricizing world is all about diffracting lots of different pasts that all come to light given what we notice in the present. We have illustrated four pasts (P1, P2, P3, and P4). Say P1 is the past that fits predictions of the status quo, that we have solved many crises before, so why not this one. P2 is a pilling up of disaster after disaster that is catching up with us, and key tipping points (peak oil, peak water, hole in the ozone layer) have happened, and as the temperature rises more than 2 degrees, the 6th Extinction is about to wipe out most of humanity. P3 is a change in how business is conducting itself and giving itself awards for its many feats of sustainability, mostly bogus, but it keeps the wheels of commerce turning. P4 is what Prince Charles is trying to tell Trump. It's time for action, to prepare in advance and soon but make a different future come about.

The futuring world is a dialectical storytelling. The 'Negation of the Negation' is a different sort of dialectical pattern than the thesis-antithesis-synthesis of the Narrative-Counternarrative World. Mostly it is a squabble, a polemical battle between political parties, between neo-liberal economists and environmentalists, or between Democrats and Republicans, two parties so far to the right that you cannot tell the difference between them anymore. In Denmark and New Zealand, there are coalition governments. That means lots of parties, and you have to negotiate to get a coalition and then get things done. Notice
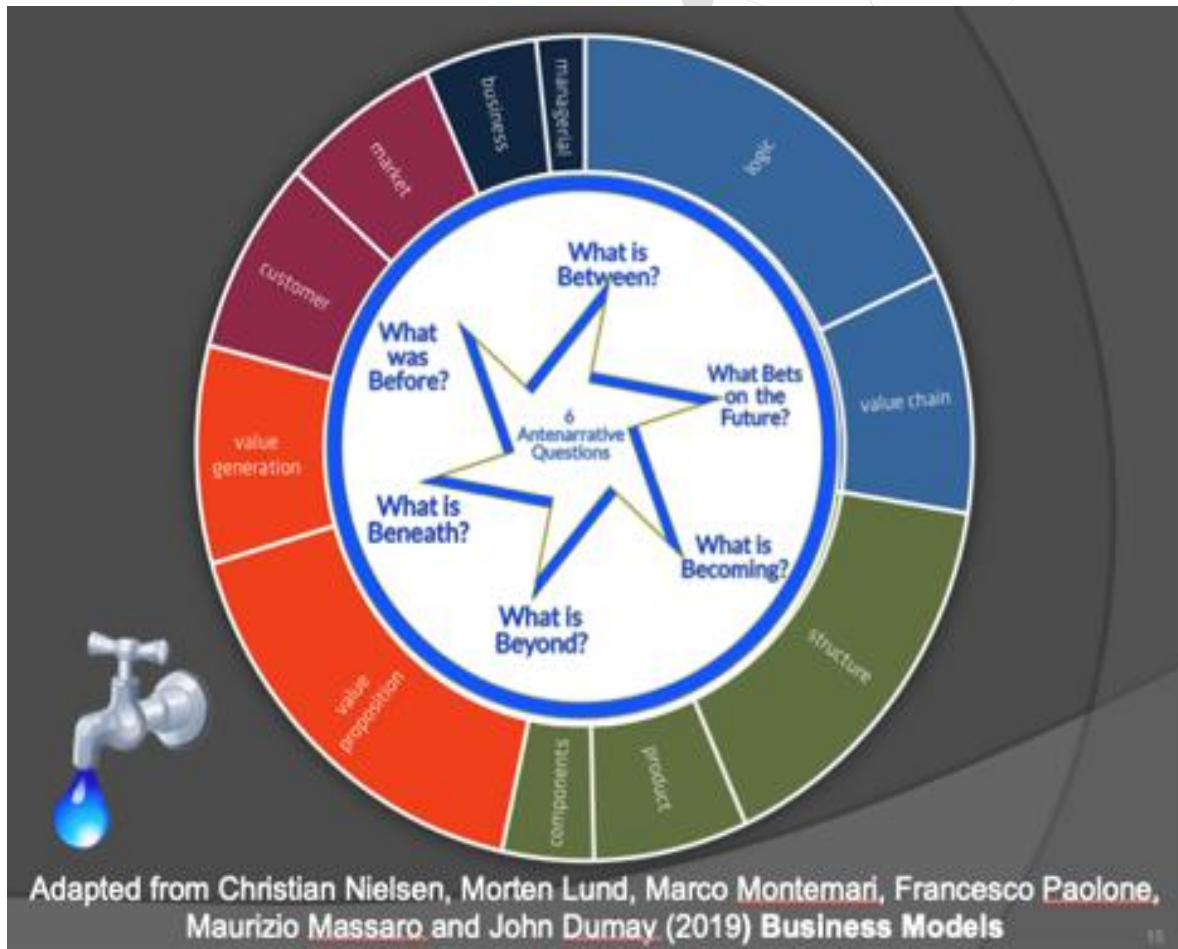
Figure 4: How Antenarrative Process Questions relate to Business Modeling

how far ahead New Zealand and Denmark are compared to Trumpland. This says something about the difference between the Living Story World, which is much more dialogical (people having conversations, negotiating positions, but not just giving in), and the dialectics of the Narrative-Counternarrative World (with all its polemical dialectics). Futuring World is a different kind of dialectical pattern, not really dialogical, and not about finding synthesis. We have put in a fractal image in Futuring, a spiral rhizome. In fact, each of the images in the figure above is a different sort of fractal pattern: cyclic for the dialogical, interweaving for diffracting, oppositional for abstracting, and the spiral rhizomatic for Futuring World.

By starting with the Antenarrative World, we can look at the dynamics involved for eco-business modelling both in terms of sensemaking as well as the political opportunities and challenges. We illustrate in Figure 4 below how the six antenarrative questions are at the heart of business modelling. This is followed by a discussion of how a storytelling science approach can be designed for eco-business modelling.

A Storytelling science approach to business modeling

A business model is a complex assemblage of material practices that combines actors, stakeholders, objects, and artifacts within and across historical, spatial, and material contexts. A business model is enacted and acted upon as it touches and is touched by many people, communities, institutions, and policies in the natural and material worlds. Products, components, structures, perceived values (both tangible and intangible), customers, markets, management philosophies, structures, and collaborative

relations and norms between actors in the value chain are parts of the complexity gathered in the chronotope.

Such emplotment indicates that business models are held together by practices and relationships that make up some common ground for the business model to work. Normally, in organization studies, strategies are seen as providing such emplotments. From the political point of view of storytelling, narrative strategies are usually too abstract and petrified and are blind to spontaneous and situated living stories that unfold along the chain of activities that make up the business model. Business models need to contain some degree of flexibility as they are enacted through time and space, because many people potentially have something at stake in regard to the unfolding of the business model in practice. Living story captures the between-ness of practices. It might refer to the between-ness of people but also to places, to nature, to the cosmos, and so forth.

When business modelling is making a transition towards eco-business modelling, emplacement is an appropriate supplement to emplotment. It captures how business models need to be grounded in the living stories and be tied to a place, a community, a natural and material geography (Jørgensen, 2020). Thus, it is the living stories and their rootedness and belongingness to a place which hold the key to shape eco-futures of business modelling. Living stories take place in multiple spaces that are scattered all over the activities in the business model, and they assemble managers, employees, suppliers, customers, politicians, institutions, and citizens and are conditioned on material practices as well as the multiple agencies embodied in terrestrials. Making a transition towards eco-business modelling is an iterative and collaborative process that comprises actors from communities, public organizations, businesses, and stakeholders. The ultimate goals would be that communities embrace businesses and businesses embrace communities, so that a business does not perceive itself as a separate entity that has no other obligation to society than abiding the law.

We suggest a 'storytelling science' approach (Boje & Rana, in review) to how 'sustainable business modelling' could be designed and implemented in ways going beyond disciplinary silos that underestimate the severity of the climate change crisis. This approach is reflexively designed to test multiple scenarios and go beyond current best-practice examples of circular economy, and triple bottom line case studies. A storytelling science should make small iterative steps along the business model value chain to implement sustainability goals. The UN SDGs can provide the headlines for such work that can bring businesses and communities together towards the overall goals that we perceive as living well and healthy and producing and consuming in a durable and sustainable fashion.

A 'storytelling science' method is a problem-based scientific approach designed towards making steps and aligning actors' expectations and actions so that they re-story their stake in the business model toward eco-business model positions. By 'storytelling science' (little 's'), we suggest Charles Sanders Peirce's (1931-1960) self-correcting semiotics of abduction-induction-deduction. It contains three different types of reasoning (Peirce, 1958: 8.385).

- 1st Deduction which depends on our confidence in our ability to analyze the meanings of the signs in or by which we think;
- 2nd Induction, which depends upon our confidence that a run of one kind of experience will not be changed or cease without some indication before it ceases; and
- 3rd Retroduction [aka abduction], or hypothetic inference, which depends on our hope, sooner or later, to guess at the conditions under which a given kind of phenomenon will present itself".

In contrast, Karl Popper (2008) developed a 'zigzag' scientific method which is appropriate for getting closer to sustainable solution approximations, given the super wicked complex problems of 'sustainable business modelling', knowing that we are never arriving at 'absolute truth' because of our own fallibilism. We propose doing refutations to attain Popper's (1956/1983: xxv) 'metaphysical realism' by being critical of the stories, narratives and antenarratives of a 'small stories' 'storytelling science' and their relation to 'Grand Narratives' ['Master Narratives' and 'Petrified Narratives'] of 'Big S' 'Science Narratives', In

other words, we organize business models in a multiplicity of interdisciplinary units and circles in pursuit of the 'Myth of the Framework' (Popper, 1994), and of course 'business models' are seduced by the myth of the framework. Peirce (1931/1960: 2.758-2.759) puts three kinds of induction in relationships:

1. **Crude Induction:** "Future experience will not be utterly at variance with all past experience." In storytelling, this is a retrospective sensemaking narrative making linear plots.

2. **Quantitative Induction:** "What is the 'real probability' than in individual member of a certain experiential class, say the S's, will have a certain character, say that of being P?"

3. **Qualitative Induction:** This is intermediate between Crude and Quantitative Induction. "Upon a collection of innumerable instances of equal evidential value, different parts of it have to be estimated according to our sense of the impression they make upon us." This we first deduce from 'abductive' (or 'retroductive') hypothesis (terms he uses sometimes differently, other times interchangeably).

The self-correcting approach to storytelling science involves successive attempts to refute abductive-hypotheses and deductive-theories by doing a series of inductive inquiries. In each iteration, the storytelling researchers document their abductive-hypotheses and any deductive-theories and associated assumption sets. Then, the inductive methods such as conversational interviews, participative observation, and field experiments are conducted along with attempts to test all three kinds of inferences. The theory-method-praxis of four successive self-correcting tests are shown below:

1. **Test One: Try to dismiss or refute business model precepts.** This is a self-reflexivity conversation to dismiss precepts that have a kind of framework fiction and if this is not workable, proceed to Test Two,

2. **Test Two: Ask other people about the business model assumptions.** Critical cross-disciplinary conversations with others. If several people concur, then the induction is conclusive, if not proceed to Test Three.

3. **Test Three: Use knowledge of laws of nature**. Understand scalability processes of nature in relation to business models. Here we apply knowledge of nature by making business model assumptions consistent with observations of laws of nature. If that does not work, proceed to Test Four.

4. **Test Four: Do experiments (and practice interventions) to see if business model assumptions are illusory**. Do experiments and practice interventions to get closer to solutions to super wicked water and climate changes that are ushering in more and more crises which are larger and on larger scales.

"All of these tests, however, depend upon inference" (Peirce, 1931/1960: 2.143). They all depend upon a method of self-correction in which the inferences are not made *post hoc* and instead are antecedent to the observation predictions (abductive-hypotheses). The antenarrative 'bets on the future' are recorded in advance of doing the inductive observation inquiry. While 'self-correcting' is the aim of 'little s' storytelling science, we approach the topic with the humility of fallibilism, knowing fully, as Popper (1956/1983: 50, 6) puts it, "scientific method does not exist" and there is no method of "finding a true theory" and the best one can get at is a 'kind of criticism' of the assumptions and the 'isms' so we get "*closer approximation to the truth*" by *critically discussing" to show what is 'not true*" (Popper, 1956/1983: 20, 23, 25). The 'storytelling science of self-correcting' deploys the Peircean Abduction-Induction-Deduction cycles in several phases (shown here are Phases I. to IV) of inquiry. Each Inquiry Phase (I. to IV.) begins with an abductive hypothesis and deductions that are then studied by induction methods.

Conclusions

As business modelling is making an ecological turn, it is important not to adopt superficial and shallow approaches. We have pointed out two examples of corporatized environmentalism, the triple bottom line (3BL) and the circular economy (CE). Both reinforce a shallow approach to business modelling's ecological turn. Our article contributes a five world storytelling model as well as a longitudinal learning approach

called 'self-correcting storytelling science'. This approach offers a way to go beyond inductive case analysis methods and sequential refutations of abductive assumptions and deductive assumptions in theory building.

By 2050, the United Nations predicts five billion people will be in fresh water shortage crises (see Guardian article). The problem, as we see it, is that the kinds of solutions being proposed will be too little and too late to save the lives of most of humanity from the Sixth Extinction (aka Anthropocene Extinction, see website). Unless we do something major to change our production and consumer habits, and real soon, the temperature will rise, the weather patterns will be more flood and more drought, the sea level will rise, the groundwater will be pumped dry, and that precious 1% of available drinkable fresh water will be mostly polluted. We can make the necessary changes, but it will be necessary to do so immediately.

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