T. Teaching Impact

Crafting new imaginaries for sustainability – What can designfiction bring to sustainability education?

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Abstract

In tackling sustainability grand challenges, the ability to create and share new narratives and imaginaries about the future is key. Imaginaries raise awareness, generate emotional involvement and foster action and innovation. Design fiction (DF) is a powerful innovative methodology that individuals may use to develop future fictional scenarios based on scientific data and science fiction reasoning in order to create awareness and start debates about possible futures. After outlining the origin, main principles and fields of application of DF, this article builds on the experience and feedback from a new 30-hour course called *Design Fiction for sustainability*, started in 2021 at ESCP Business School, to foster discussion on the potential of DF. How can DF contribute to renewing sustainability teaching in a business school? What type of imaginaries does DF help shape? To what extent does DF act as a catalyst for students to take action in their future role of managers?

Keywords: Design fiction, oceans, sustainability, utopia, dystopia

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Introduction

In tackling sustainability grand challenges, the ability to create and share new narratives and imaginaries about the future is key. Imaginaries raise awareness, generate emotional involvement and foster action and innovation. Several streams of literature have been investigating this issue, following different disciplinary perspectives. In organisation theory, Hoffman and Jennings (2018) have highlighted three different imaginary archetypes through which people engage with sustainability challenges: collapsed systems, market rules and technology fix. They draw upon the experience of the Great Transition Project, initiated by the physicist Paul Raskin. His research focuses on visions and trajectories towards a decent future. He has imagined three broad channels running from the unstable present to the imagined future, oscillating between utopian and dystopian imaginaries: conventional worlds, barbarisation and great transitions (Raskin 2014).

In the field of economic sociology, Beckert (2013) defines “fictions” as images of some future state of the world or course of events that are cognitively accessible in the present through mental representation. Establishing a bridge between future representations and present behaviour, he contends that individual actions are motivated by imagined future states, and that individuals organise their activities based on these mental representations. This perspective highlights in particular the influential impact that fictions have on individual behaviour and decision making. Similarly, Arthur Keller, one of the French thinkers of “collapsology”, trained as an aerospace engineer and specialised in the study of systemic risks and collective resilience strategies, often defines himself as an "expert on narratives as drivers of mobilisation and transformation".[1] Society-level transformations are his main concern. When the future appears to be dystopian, evoking possible futures allows us to act on the present by creating a form of "tragic consciousness", as suggested by Engélibert (2019), in a recent book on the critical power of apocalyptic fictions.

Mirroring this disciplinary interest in imaginaries and fictions to foster sustainability transitions, there are calls in the field of pedagogy to reinvent the way we teach sustainability. Instead of relying predominantly upon scientific facts and figures, analytical tools, optimisation models and management techniques, Shrivastava (2010) advocates developing students' passion for sustainability by including emotional and hands-on creativity components in the learning experience.

Speculative design – at the crossroads of Foresight and Design approaches – and Design fiction (DF) in particular offers powerful innovative methodologies to fill these gaps. Using DF methodologies, individuals are led to develop future fictional scenarios based on scientific data and science fiction reasoning in order to create awareness and start debates about possible futures. By creating fictional future scenarios that are evocative and striking for the audience, and to which people can personally relate, DF pursues several objectives: shaping new imaginaries about the future; anticipating risks and social and cultural trends; creating awareness and facilitating dialogue between different stakeholders, namely on usages and misusages of new technologies and innovations; and highlighting their multiple impacts on users and society. These approaches have been increasingly used in the corporate and public (in particular military) context since the late 1990s.

[1] https://usbeketrica.com/fr/article/effondrement-guerre-recits-arthur-keller

In this paper, we report on a recent pedagogical experience in teaching a course on sustainability, using Design Fiction and based on the following assumption: having each participant imagine what might happen tomorrow constitutes a fruitful way to generate collective debate today, which will improve and enrich decision-making with a view to a sustainable, ethical and desirable future. DF methodologies were applied to the topic "*the future of oceans*". Oceans constitute a key topic in sustainability as they play a central role in human life and are deeply affected by several grand challenges such as climate change, biodiversity loss and increased pollution. During the course, students worked in contact with futurists and designers in order to explore, experiment and create utopian or dystopian possible futures in the context of future-oriented design projects. The course provided students with knowledge and a method to co-construct new imaginaries for sustainable futures.

After a brief introduction to the DF approach, we will explain the content and structure of the course and present the fictional artefacts produced by our students. Then, building on our own experience and feedback from students, we will address the following three questions: How can DF contribute to renewing sustainability teaching in a business school? What type of imaginaries does DF help to shape (utopian vs dystopian)? To what extent does DF act as a catalyst for student action in their double role as citizens and future managers?

Design fiction and its multiple objectives: from raising awareness to driving innovation

The concept of DF, within the broad field of foresight and speculative design, was coined in 2005 by the American science-fiction writer Bruce Sterling and was further popularized by the researcher, artist and technologist Julien Bleecker who defined it as “a conflation of design, science fact and science fiction (...), an amalgamation of practices that together bends the expectations as to what each does on its own and ties them together into something new” (Bleecker 2009). Design fiction uses storytelling and prototyping as tools for imagination and action when rethinking the future. It draws imaginary elements from science fiction and questions the relevance and suitability of contemporary innovations and technological orientations. Design Fiction shares similarities with the Speculative and Critical Design approach (Dunne & Raby 2013), born in the UK in the same period, whose aim is to develop a critical perspective or inspire debate, while increasing awareness of social, cultural or ethical issues in society.

The innovative element of such methods is to make a break with the dominant probabilistic and positivistic approaches such as the Delphi Method and Scenario Building, most of them conceived in the military sphere before spreading to the scientific and corporate domains, and consisting in attempts to predict tomorrow in a statistical manner, to achieve maximum complexity in terms of both available data and analyses (Making tomorrow 2020). In the field of sustainability, the Meadows report (1972), commissioned by the Club of Rome, and which has sold more than 30 million copies since its publication, offers a good illustration of this statistical and probabilistic approach. The report elaborates several computer-based scenarios of exponential economic and population growth within a finite world. It continues to generate debate about the unsustainable nature of our current production and consumption models and is often used as a baseline to which more recent scientific reports are compared. Likewise, the Intergovernmental Panel on Climate Change (IPCC) compiles scientific data and models to provide political authorities with objective, scientific information relevant to human-induced climate change, assess its risks and consequences and link scenarios on global emissions with global temperature rise. By comparison, speculative design constitutes a very different – and complementary – methodology and approach, which can help to better illustrate, materialize and visualize current and future

environmental challenges. By crafting concrete and radical scenarios, speculative design provides a useful method for the audience to understand the personal and ethical implications of possible future trends. As such, it is an important approach to shape debates about multiple possible futures in order to trigger action, both at the individual and collective levels, to transition towards a sustainable world.

In the business world, corporate foresight is developing as a key methodological discipline in the field of strategy (Making Tomorrow, 2020), renewing current approaches to risk anticipation and innovation management. It can help organisations identify strategic objectives such as long-term oriented value propositions for products and services including social and environmental sustainability as core dimensions. This is why developing foresight and speculative design capabilities can represent a real strategic asset for companies seeking to shift towards sustainable business models.

Among different approaches to speculative design, DF is increasingly used by organisations to apprehend, model and test possible futures. By imagining the world's evolutions in 15 or 20 years and materialising them in fictional artefacts (videos, newspapers, short novels, etc.), DF makes it possible to better understand the implications and the changes that are to be enacted today to cope with future sustainability challenges. Importantly, while DF uses fiction as a way to frame stories and design narratives, it is also based on facts, extrapolating existing trends and scientific data. Indeed, building on science-based facts that are expected to determine the future of our eco-system enables us to combine realistic evidence with forward-thinking scenarios. At the business level, experiencing design-fiction processes triggers awareness and facilitates the exploration of new business opportunities or threats.

Design fiction for sustainability: a course on the future of oceans

"*The global climate crisis is a constant reminder that our planet is a closed, limited system, and that we are currently living far beyond its boundaries. What would our world look like if we actually respected and lived within our planetary boundaries? How would we organise our homes, communities, cities, and nations? To what extent can companies and brands trigger positive action and inspire changes in lifestyle, consumption and ways of working to promote the ecological transition around the world?*"

This is the hook of the syllabus of a new 30-hour elective course offered this year to the MIM students at ESCP on the Paris campus. The course was developed by Aurélien Acquier, Valentina Carbone (professors @ ESCP Business School), and Martin Lauquin, cofounder of the "Making tomorrow" collective and creative strategist, expert on DF and strategic thinking at OnePoint.[2] Addressing sustainability challenges through the DF perspective, the course is meant to provide students with the ability to engage with diverse temporalities and perceptions at different scales (individual, organisational and societal); to research, understand and bring together insights from diverse disciplines; to be critical of unquestioned assumptions; to detect key ethical and cultural dimensions of our era and

[2] In addition to Aurélien Acquier, Valentina Carbone and Martin Lauquin, in charge of the course, and five designers tutoring the project carried out by students, eight lecturers and guests were also involved: Claire Marchive, Expert in Foresight methodologies; Nicolas Minvielle, Professor of design and strategy at Audencia Business School and co-founder of Making Tomorrow (He works closely with scientific and military experts to imagine the threats of tomorrow as part of the RED TEAM); Andrew Merrie, Researcher at the Stockholm Resilience Centre. Coordinator of Radical Ocean Futures · An #artscience project of the Stockholm Resilience Centre; Adrien Rivierre, Expert in public speaking and storytelling; Samuel Bernier, Designer and expert in digital manufacturing techniques, renowned internationally ; Olivier Wathelet, Expert in anthropology and design fiction, and co-founder of Making Tomorrow; Françoise Gaill, Emeritus Director of research at CNRS, in charge of the scientific board of the Ocean & Climate platform; Cécile WENDLING is Group Head, PhD, Director of Foresight at AXA (with more than 15 years' experience in long-term thinking, her role is to anticipate trends and disruptions that will impact the way people live and work in the future).

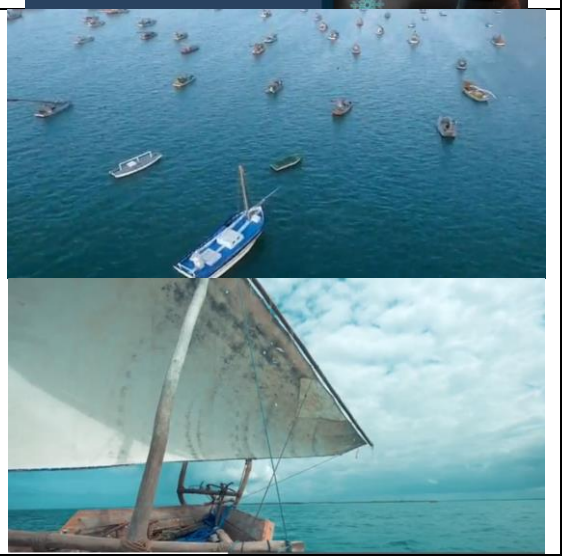
society; to be constructive, using various media to convey and stimulate longer-term visions of the future, and to be able to raise questions for today's models and behaviour.

In its first year, the course focused on a topical environmental concern: the fate of the world's oceans. Students were engaged in designing future scenarios under the influence of a complex set of phenomena, most of them interrelated and presenting a high level of uncertainty in terms of the magnitude of their effects. Topics discussed with students and facilitated by guest scientists and ocean experts included biodiversity loss, the melting and collapse of ice caps, sea level rise, and the formation of deep-sea dead zones as a result of onshore pollution. In addition to this scientific expertise, students also heard from artists and designers, all sharing the belief that foresight and speculative design approaches can succeed in attracting attention and raising awareness where scientific papers may have had limited success.

Delivered in ten sessions, this course is structured in three phases. The first phase is all about exploration, framing the future oriented question and classifying trends. The group then identifies the topics they think will most structure the future. During the second phase they formulate the challenges to address and define the scenarios and possible "worlds" to incorporate in scenario building. The third and final phase consists in prototyping and creating fictional artefacts. The five fictions developed during the course were presented to a jury comprising the different lecturers and guest speakers, as well as other experts.

Table 1: Description of the fictional artefacts developed by students – 2021

Title	The speculative question and a short description	Images/screenshots
NOVA ATLANTIDA	"What is the future of government technology in 2100 for new marine communities in the world due to the extreme rise in sea level? A short movie mingling dystopian and utopian perspectives on the future organisation of marine communities that highlights political issues through algorithmic governance solutions, controversial social dynamics and natural ecosystem degradation. Link to the short movie: https://www.dropbox.com/s/2fpn5wyvx45vhqr/Nova%20Atlantida%20%281%29.mp4?dl=0	 
MESSAGE FROM THE PAST	"What will be the future of our world in 2100, when all the fish have disappeared due to extreme marine pollution and ecosystem degradation?" A short movie depicting the future of our food system when the ocean has no fish left other than jellyfish: a world of inequalities, where only the happy few can live in aquatic domes and enjoy expensive alternative plant-based food. An appendix to the artefact was also presented in the form of a start-up solution to the problem. https://www.youtube.com/watch?v=NvmOQtY3C-I	

		
ARE WE PAST THE TIPPING POINT?	"Will we have reached a tipping point for ocean plastic pollution by 2060?" A comic strip, incorporated into a short video showing the devastating effects of inaction against marine plastic pollution, in spite of the numerous scientific alerts and civil society protests. https://www.youtube.com/watch?app=desktop&v=3fywrI7nqyc	
CRYSTAL BLUE	"What will be the future of tourism in the Mediterranean Sea in 2100?" A composite artefact, built around a website and including a podcast narrating the experience at the elitist Crystal Blue resort (business logic), and showing equipment designed to embed "the real virtuality" technology in dedicated objects to allow visitors to enjoy artificially-made "perfect nature". Link to the website: https://dhruvijain000.wixsite.com/crystalblue	 
THE FUTURE OF MARITIME TRADE	"What will be the future of maritime trade in 2087?" A short movie, with a very calm and soothing voice-over, narrating a utopian future for the evolution of maritime trade, which will have evolved towards low-tech solutions, refreshing ancient modes of sailing and reconnecting with slowness and community life. Link to movie: https://www.dropbox.com/sh/etk8394nd3rsl6w/AABecVmYlglmrPrzR7J45Qdaa?dl=0	

Main takeaways

- **A destabilising but very rich experience for participants**

Tackling the topic of sustainability using a speculative design methodology, based on creativity, critical thinking and design capabilities is a significantly different approach than

the usual management classes based on problem solving. For some students, the inherent uncertainty in the DF approach was destabilising. They sometimes found themselves in the uncomfortable position of not knowing exactly what was expected, as they feel more secure and confident when looking for “solutions” and “answers” to defined problems. For many students, it also took time to understand that they did not have to come up with solutions to address the issue of oceans, but to design scenarios in order to raise awareness, generate questioning and emotional reactions from the audience.

> *The most challenging aspects in this process were a sense of being lost during the first sessions, not knowing where our work would lead us, agreeing with teammates on scenarios, and finding the right balance between fiction, plausibility and imagination.*

In spite of – or maybe thanks to – these difficulties, student feedback on the DF approach has been extremely positive. A high number of comments underlined the innovative character of the course, the involvement of a wide variety of professionals and researchers in the course, and the fruitful combination of research with imagination:

> *It was the first time that I engaged in scenario building and speculative design in such a critical way. Thus, the most enriching parts were classes like the world building. I found it very inspiring to hear how big the impact of storytelling can be and how important it is no matter the topic. It also has great applicability in the business world or other areas.*

> *Courses like this are the reason I decided to pursue a dual degree in the international master’s programme rather than a traditional domestic degree from my home country of India. It’s disheartening that most of the courses taught during a management degree still talk about case studies from the 90s and 2000s. (…) This has been a completely new, unique, fun and insightful experience for me. Every day of these past ten weeks has been a new challenge filled with unparalleled learning along the way.*

In comparison with more conventional analytical courses in business school programmes, the DF course is also a way for students to build and value different types of competencies and skills: creative narration (instead of formal analysis), the ability to develop a subjective discourse and generate emotional reactions (instead of analytical correctness) in the audience, quick creative prototyping and visual editing skills (comics, video, etc.).

> *Some fiction basics such as “do NOT defer judgment”, “generate discussion”, “involve stakeholders”, “think like the future is now and choose your own future” will definitely stay with me.*

> *Business school students do not often get to study a course which involves everything from research, brainstorming, designing, and future building, while also learning project management skills along the way.*

- **The dominance of dystopian imaginaries**

In the fictions designed by the students, the dystopian imaginary is largely dominant. In several fictions produced by the 32 students who attended the course, the stories combined the imageries of ravaged nature (Gendron and Audet, 2018) and a social "bunkerization" logic (where a small protected elite can still access basic ecosystem services). In the students' eyes, what can be considered today as ordinary (eating, bathing in the ocean, access to food, seeing marine animals) is likely to become a privilege and a luxury experience in the near future. Far from a positive utopia of conservation and protection of natural habitats, the themes that prevail are the appropriation, privatisation and exploitation of the ocean's “common goods”. This dystopian imaginary is also marked by the growth of social inequalities. The students emphasised the social dimension brought about by a world

whose resources are shrinking, showing a dialectic tension between resource appropriation by the privileged few and exclusion of the less fortunate.

This result is induced, at least to a certain extent, by the DF method itself. Indeed, as a central objective of DF is to provoke a strong emotional reaction and engagement from the audience, it is easier to generate such reactions by building scenarios based on radical, extreme and dystopian imaginaries. By comparison, students may view positive utopias as a riskier choice: either too complex to develop, likely to be seen as naïve, or too "flat" and less likely to generate reactions. At the beginning, the professors hoped the course would help students explore and identify positive environmental imaginaries to offer an alternative to the narrative of eco/social "collapse" or techno/market-solutionism. Viewing the final productions from students, it became clear that this hope was overly ambitious, not to say vain, especially given the time frame of the course and the novelty of the exercise for business students. Rather than shaping radically new imaginaries, the value of DF seems to lie more in fostering students' capacity to design concrete, subjective futures, and to project the audience into such possible futures. One of the avenues we will try to explore during the next courses will be how to make DF work better for the deliberate and voluntary construction of new sustainable imaginaries.

- **A deep questioning of the identity and roles of managers in the sustainability transition**

Unexpectedly, the course also raised deep questions about students' identity and role as future managers. Several scenarios developed by the teams questioned the place of entrepreneurship in a world constrained by the scarcity of resources and the climate crisis. In crafting their scenario, several groups projected business services in this future context. Rather than provide any sustainable solutions, these business service propositions monetise access to the remains of nature and are simply deriving financial profits from resource scarcity and the financial opportunities created by the problems they denounce. These products and services may even feed into and amplify ecosystem crises. Such business projections raise the question of the future role of managerial decisions and innovation strategies in a world with increased pressure on resources. Beyond pointing to the ambivalence of corporate discourse on natural resource preservation, this raises many ethical tensions and identity questions for future managers on the meaning of their career and purpose of their future employers.

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