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Fly as One

Collaborative Sandboxing as Method

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Abstract

This article examines sandboxing as a collaborative storytelling method by turning the sandbox into a place of collaborative storytelling to break open existing narratives and create new and different stories. The paper describes the method itself and the steps to be taken for using sandboxing. While simple in its setting, the process creates the foundation for a collective understanding of complex challenges. The second part of the paper analyses the final setting of a sandbox session on collaborative future-making. The analysis shows the need to connect and fuse apparent binaries and opposites, both in individuals and society at large. While the binary mostly relates to humans and gender characteristics, the division and splitting apart of entities into smaller, countable, and definable parts has been and still is part of an ongoing process in Western culture. Material storytelling in the form of sandboxing

plays a small, but important role in recreating the idea of wholeness and community.

Keywords: Sandboxing; Collaborative sandboxing; storytelling; future making; material storytelling

Introduction

Throughout this article, we will insert musings from our sandbox session. While we had a clear framing – creating the actual call for this edition of Academic Quarter – the process itself took the participants to many unknown and surprising places and ideas. As such, this article can be seen as a reflection on the process itself, which has no clear-cut results or conclusions but must be seen as a work in progress. In this, this article opens the gates for other methods of storytelling and future-making, some of which can be found in this 26th edition of Academic Quarter.

The first agential cut

> *The box is filled with white, neatly raked sand, resembling a childhood sandbox or a small beach. It is pristine and almost calls to the participants to engage with it. Around us, the room is stuffed with more sandboxes, shelves, and tables, which hold an array of different artefacts: transportation devices, natural objects, all kinds of animals, people from different jobs, cultures, and religions, décor and furniture, houses, fantasy figures from Disney to mythical beings, religious and spiritual figures, and broken or halved things. We are almost ready to begin our sandbox session on collaborative future-making.*

Sandboxing is one method within material storytelling methodologies. It has been developed over the past fifteen years by Strand (2010, 2012) and has mostly been used within organisational settings and challenges. Only recently, Strand has turned to further develop sandboxing as a collaborative method for creative storytelling outside an organisational setting. The main idea in material storytelling stems from Barad's theory on quantum entanglement of matter and meaning (Barad 2007). Matter, like time and space, is seen as having an active agency in the process of materialisation, where stories are a congealing of agency (Barad 2010).

Our sandbox session is framed within the making of a future less driven by the markings of differences and with it the fear of the Other, the estrangement that it rests upon, than the recreation of wholeness in the individual and communities. To initiate the process of becoming, an agential cut is needed. With it, the founding difference which entails cutting something or someone together-apart (Barad 2007) is made. Cutting something together in Barad's sense means excluding (cutting apart) all other left on the outside of that which is defined as the including commonness. The estranged become the Other, the excluded. This cut matters as it sets the boundaries for what is or can be made meaningful from here on out. Some things, ideas, and arguments will be less likely to be thought, meant, felt, and acted upon once such a founding difference is installed.

Our session on collaborative future-making takes its starting point from the call and subsequent presentation for the conference on Collaborative Future Making in Malmö, Sweden, 2-4 May 2023. The main idea is to use the session to express our ideas on the subject matter, as well as a trial on how to use sandboxing in exactly this setting. While Strand is the expert, Jensen comes from fandom research, focusing on fanfiction communities and storytelling as a way of transforming an original piece of pop culture (Jensen 2018). This sandbox session is our first collaborative storytelling project.

Our first agential cut is a framing of the richest possible difference for our ability to collaboratively make a future for all living. One that carefully considers past mistakes in care of a new emergent story to take us truly beyond the present situation of uncaring and being uncommitted, the careless continuation of fear-based estrangement (Strand 2023; Bauman 2013).

> *When the two-headed beast is placed beside the two love birds, something changes in the dynamic of the sandbox. The two figurines become the centre piece, re-storying the evolving tale of the other groupings. Despite the beast denoting a binary, further cemented by the apparent harmony of the pair of birds and contrasted in the beast's disfigurement and disharmony, the other dualities of the sandbox merge, turning into a potential story of becoming, of sense- and meaning-making.*

The framing of our research emerges and clarifies during the silent setup of the artefacts and the subsequent discussion and elaboration of the setup in front of us: How material storytelling in the form of sandboxing can play a small, but important role in recreating the idea of wholeness in the individual and the community?

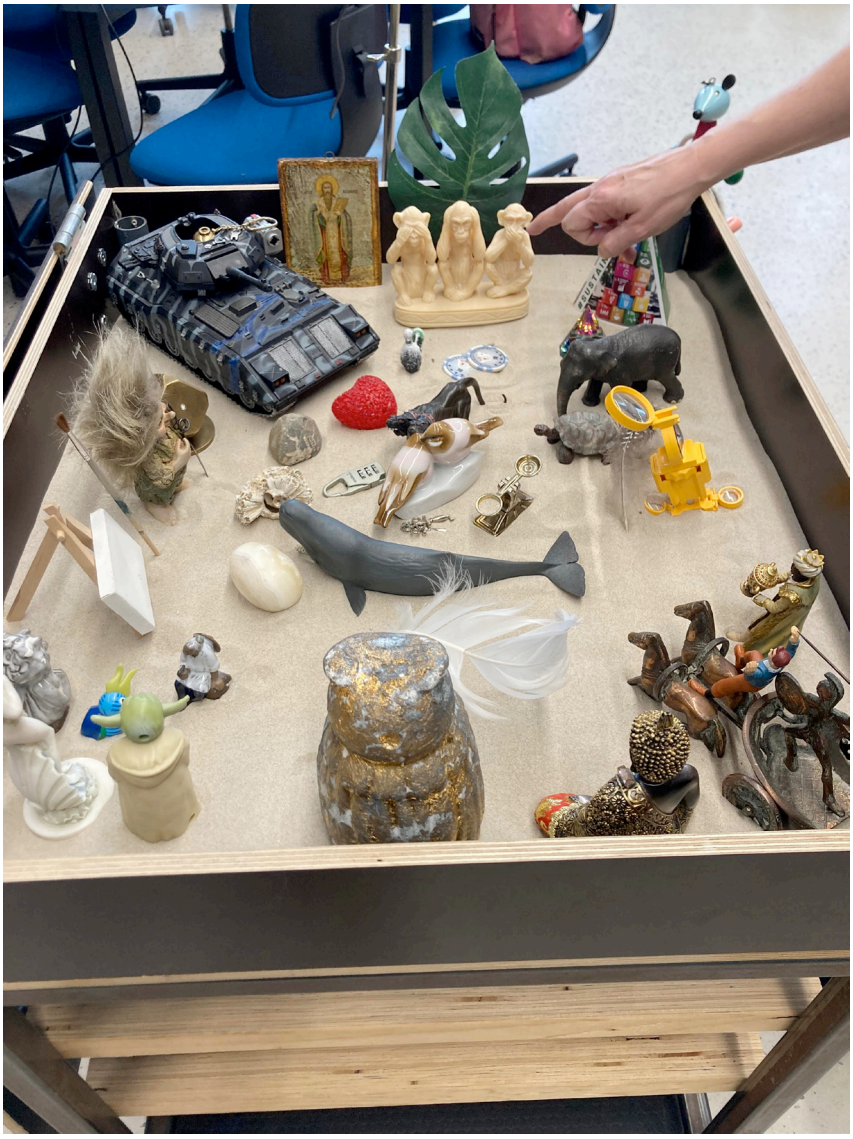

Figure 1. The almost finished configuration of the sandbox. The heart in front of the tank will be moved onto the tank.

The configuration

In upper left corner, we have the tank, huge and menacing; in the opposite corner a small group of figures, denoting different religions and philosophies. A red heart is placed between the tank and the two-headed beast. In the lower left corner, figures from pop culture are placed, next to these, and as a contrast to them, is the owl, denoting universities and knowledge, with the group of religious and philosophical figures on its right. Across the sandbox, in the opposing corner of the pop cultural figurines, a paper pyramid with the seventeen Sustainable Development Goals by the UN is positioned, together with a prism, breaking the light into its different colours as a hint to a pristine read of the pyramid. Right beside these, sit a figure of "The three wise monkeys", *a few casino chips in front of them hinting at the societal gambling of non-seeing, non-hearing, and non-speaking as a disabling of the senses.*

The centre evolves around the two-headed beast and the love birds. Slowly, several other animals find their places, creating a larger circle, which is surrounded by other artifacts, a looking glass, an empty easel, and a nature person next to a heavy dice. The number of animals is growing. A lock is placed in front of the two-headed beast and a set of keys next to the lovebirds indicate how to unlock it. A tipped scale next to the lovebirds hints at an unbalance.

We both stop, silently agreeing that the sandbox is finished. No new figurines will be placed, but one little change will be made. The heart between the tank and the two-headed beast is laid on top of the tank. Noting the need to use an abundance of love, of understanding, and trust to fight the conflicts of the world. The heart leaves a small heart-shaped mark in the sand. Its absence creates a surprising desolate feeling. This is just a sandbox filled with small figurines. Just something, a child would play with. How can this superficial indent in a heap of sand make us feel so lost?

The silent choosing and placing of figurines is only the first part of the sandboxing method. It revolves around a few activities, which through their simplicity help create a collaborative storytelling process. The following steps are necessary when sandboxing is done collaboratively:

1 Choose a relevant and common interest; while it gives a certain focus, make sure not to be too restrictive and pronounced. This is the agential cut.

2 Two or more people can work in one sandbox. While the figurines are placed, everybody is silent. Each figurine becomes part of the common story field of the sandbox for the participants to work with.
3 Work with the placing of the figurines until everybody stops finding new pieces and (re)placing them.
4 In the process of making sense of the configuration, we notice and articulate the placing and meaning of the figurines. You can reflect on and explain their groupings, opposites, and other possible relations.

Besides these simple steps, Strand has used the past seventeen years to collect a huge number of different figurines and objects. While working with the sandbox, the active search, the walking through the room, looking, trying to find or discover a certain kind of figurine on one of the various shelves, is part of the sandboxing method. While the arrangement of the artefacts seems random, Strand's method demands that the eight categories of artefacts, as presented in the first paragraph of the introduction, are presented on each shelf or table. With Barad (2007) and Latour (2021) the room as space, the time and context, and the matter in the form of shelves, boxes, and artefacts are actors and acting with us, because they are *there*, present in the room. As Haraway (2008, p. 4): "Figures collect the people through their invitation to inhabit the corporeal story told in their lineaments."

Storytelling becomes a tangible venture, turning the 'telling' away from words to ambiguous artefacts, which can be interpreted through associations invoked by their symbolism or the concreteness of their appearances, the way they feel, their placement in the sandbox, or their proximity to other figures. You can set the object on top of the sand or bury it underneath or place it off balance. You can level the sand or build dams and dig holes. In more than one way sandboxing takes you back to your childhood, letting you play; but play using the knowledge and experiences of your adulthood.

Now, we must make sense of the configuration in front of us. The heart-shaped dent will allow us to remember the need for caring and compassion, as the two-headed beast becomes our focus. In our interpretation, the storytelling becomes a re-storying of one

of the most dominant and destructive binaries of the cutting together/apart of humans: that of cutting the feminine and masculine apart, at the same time cutting them together with stereotyped, opposite sexes.

Figure 2. The different opposites. Furthermore, each grouping of figurines can be seen as opposing the groups close by.

The analysis?

With Shklovsky's (2015) term of defamiliarization we introduce the term enstrangement as a counter to the process of estrangement, the fear of the Other. Enstrangement depicts the way of making seemingly ordinary things feel strange and complex by looking at them from a different angle. Re-storying needs a moment of enstrangement and sandboxing offers that in building a miniature of the familiar in unfamiliar circumstances and in doing so, secures the enstrangement necessary for the re-storying to emerge. With enstrangement comes the possibility to ask how this setting enables us to re-see, re-story, everything around us. This element of enstrangement takes place in sandbox configurations and provides for a re-storying of the mundane, the familiar, in an unfamiliar, awakening process that unlocks us. Boje (2001) uses the term *antenarrative* to depict the motor of re-storying. Ante–as in an emergent pre-cedent or ante-cedent and as a bet on the future to come.

It is the two-headed beast, which turns into the fulcrum of the setting. Through it, we can begin to explain and maybe even understand the different. Better yet, we can find a way to understand, to explore different possibilities for re-storying the future by unlocking the fulcrum; the congealed narratives of binaries unhelpful for a future to come.

Like the original placing of the artefacts became a dance between the two of us, one position taken, leading to a new way of seeing the figurine in one's hand, maybe hesitating, before putting it down, not in its intended place, but in a new one. An even better one? Or just a different one, creating a new cycle of wonder or determination. The ensuing exploration of the possible of sensemaking becomes a new dance (Strand and Sparholt 2017). This time, words are our tentative way to understand what we un/knowingly have built, slowly melting our understanding together, helping each other along the way. We come from different storytelling universes, as might be sensed in the configuration of the sandbox; we need to find words and expressions which can help us understand each other, articulating our many ways of knowing (Heron and Reason 2006).

With the two-headed beast, we have a symbol that marks the second agential cut of a founding difference (Barad 2007). Such cuts matter as they set the boundaries for what is made meaningful from here on out, and it leaves marks on various bodies that are enabled

by the field of possible becoming (Strand 2021). With the two-headed beast, the cut is still in progress. The two heads fighting each other, maybe waiting for the cut to become complete. Our initial discussion takes us into the realm of the cut society deals between the feminine and the masculine within each person. The two-headed beast becomes the symbol of the pain this cut creates. The love birds become the symbol of the beginning of a healing process, joining the two parts together to fly as one.

However, the materiality of the sandbox configuration enables us to point towards another problem of this agential cut: healing the two parts might turn them into an oneness, which is then set in stone. Indifferent to the world around them, apparently able to fly, without having the possibility to move. Leaving a narrow window of normality and other forms of life outside, un-normal, non-existent. Embracing both sides to transcend the apparent binary, might be a first step to turn towards caring and kindness (stereotyped as feminine), away from fear and aggression (stereotyped as masculine). While the binary is a challenge, not just for society but for every single person, who is unable to embrace their whole of humanness, bringing both parts together in the individual person is just one step forward. The need for an awareness of flexibility, change, and transformation regarding gender norms and characteristics, should be an ongoing process. Cutting off certain gender characteristics denotes a limit, which imposes a threat to the wholeness of humanity. We need a new way of storying, a new way of re-storying the hero's journey, to become the journey of life, of caring and kindness, rather than fighting and conflict. More than that, we need to understand, as Latour (2021) and Haraway (2016) point out again and again, how everything is entangled, depending on everything and everyone else.

Dividing the binary into a female and male part, with the female being caring and kind and the male aggressive and hard, shows our dependence on existing notions and biases of gender theories. Creating a new story from our sandbox setting means surpassing this binary, at the same time needing to surpass the limits of our way of doing research, maybe even the language, we use. As the individual is cut apart from one of its inherent traits, localised in the opposite gender, we need to find a way to reconnect the parts, and more

than that, to become more than our parts; synergy to become human, a truly true *human* human (Strand 2023).

The two-headed beast is just one of several binaries in our sandbox. Figure 2 shows the different oppositions, often a 'good' (the owl = knowledge and wisdom) versus a 'bad' (the three 'wise' monkeys, here, interpreted as a way of not acknowledging the state of Earth, the climate crisis, the ongoing conflicts around the world) grouping. As such, like the gender binary, it denotes existing fears, existing preconceptions: not seeing, not hearing, not speaking, as impaired, made ignorant, conditioned by industrialism.

Still, the sandbox, its figurines, and their placement can take us one step further. Because of the ambiguity of the different parts in play, we need to acknowledge them in another way. The enstrangement of the process means a new way of creating a story, a new way of a living storying process (Boje 2001). The sensemaking of the sandbox configuration is on-going, each time a new look on the setting brings new pieces to light. Also, you can change the placement of the figurines, depending on you and your collaborators coming to an agreement on the changes. Because of this process, sandboxing can be seen as a counterpart to the ongoing processes of division and particularisation and individualisation, we can detect in Western societies. Bauman (2013) and Latour (2021) explain about the falling apart of society into ever smaller pieces, making it impossible to act as a community. Because a community needs more than proximity, it needs the will to act on behalf of the inhabitants and agencies within said community, no matter if these themselves can act. According to Bauman (2004) a community can be defined as a group of people sharing a set of values, and a commitment to support each other. He shows how industrialisation has made it possible to divide communities, turn them into individuals who must fight for themselves. Reading Bauman through Latour and Haraway, these individuals become multi-species and agencies, interdependent in the critical zone, staying with trouble of the whole. This way, we include resources like animals, plants, infrastructure as inhabitants and agencies within the community. As Bauman and Latour show these agencies including humans are turned into a question about money (knowing the price of everything, but the value of nothing), the values of a person have been turned into the price for their labour; the money, they can use to be a 'good' con-

sumer. Likewise, animals and plants, etc., can be priced and defined by metrics, efficiency, and quantity, at the expense of reducing of the senses, not-seeing, not-hearing, not-speaking, turning everything into non-sense.

Latour shows how we need actual communities to be able to act on the crisis and conflicts, happening now and becoming even more severe soon. We are by no means isolated as an individual, instead we are part of the whole of Earth, Gaia, in Latour's words. We can define, describe, measure, and label the world, its inhabitants, and even the Universe, without understanding the intricate interactions and dependencies between the actors. As Theweleit (2020) shows, the very way our Western culture and language works gives us an advantage when colonising new places. But it is a language and culture of death and destruction which makes it near impossible to avoid the forced submission of others. "Others" being anyone and anything which is not a white, cis, hetero male.

Even in storytelling, we have the division into smaller parts, which can be counted, measured, explained. The hero's journey (Vogler 2007) being one example of a structure, which can be divided into time frames, with clear instructions on what needs to happen next. This works fine when writing a story. The structure is a given, the hero's development as well, the writer or storyteller can fill in the blank spaces, creating interesting characters (each with its own purpose for the hero and his journey), the plot can even be twisted and surprising if only it follows through and connects all the dots of the journey. This form of worldbuilding has its own set of rules, the basic framework laid out in Tolkien's *On fairy-stories* (1964), a more elaborate explanation found in Wolf's *Building Imaginary Worlds* (2014). These examples are taken from an Anglo-American culture, but structuring a story, including the way characters act and develop, can be found in other cultures as well. Sandboxing offers a different kind of worldbuilding, inspired by Margaret Lowenfeld's world technique (Lowenfeld 1950).

Concluding remarks

All the above stands in stark contrast to sandboxing. The story structure is gone, instead the story emerges through the intra-act of matter and meaning and is therefore not so much told as it is invoked through the complex between of figures, placement, cuts,

associations, in a continuous dance of meaning and mattering (Poulsen and Strand 2014). As the story congeals between the two of us, we feel our way through to an understanding, which evolves every time we revisit the configuration, every time we continue our contemplation. There is no hero, even if the two-headed beast can be seen as our pro- or antagonist. Even the opposites, we see in our sandbox, will be seen as something completely different by other participants. Their story would become different, connecting the sandbox with their experiences and life story, as the sandbox triggers their imagination and subsequent story.

The point being, much of the opposition, of the conflict, and separation, we find in our society, might be explained by Bauman and Theweleit's analysis of our society's implicit need to measure and describe every little bit of being human, beginning with the world around us, our work and spare time, till now, our body, gender, and sexuality. With Barad's agential cuts, making it possible to differentiate between the normal and usual on one hand, and the obscure and Other on the other hand, material storytelling in the form of sandboxing understands objects as socio-material knots (Haraway 2008) or onto-semantic constructs (Barad 2007), which through their relation and proximity to other artefacts gain meaning and create the story. The story, which turns into meaning through the contemplation with one another.

The two-headed beast, about to tear itself apart, might be seen as a symbol for humans, trying to tear themselves apart, to become what is expected of them: be a real man, be a real woman, be a good worker, a good consumer, at the expense of the whole. And never a good person because you cannot measure and price value, nor the value of the whole.

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Spatial Scales in the Making of Future Experiences

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Abstract

The fundamental principle in experience design is a fluctuation between familiarity and unfamiliarity, which invites users to make his or her own sense of a design. This is an inclusivist attitude aiming at evoking curiosity about what is actually going on. One of the

ways to generate this fluctuation is by manipulating the spatial scales as part of redesigning and restorying buildings. Through examining how novice designers handle spatial scales in their construction of an experience to come, the paper identifies four approaches, arguing that they may serve as scale-oriented design principles for restorying a building as either more familiar or more unfamiliar, more homely ("a place") or more alien ("space"). Our argument is that these principles can be used systematically to promote this fluctuation as part of the making of future experiences of buildings and to stimulate user inclusion as a collaborate manner of future making.

Keywords: Spatial restorying, experience design, scales in design, collaborative future making

Why scales matter in the design of experiences

The purpose of experience design is to create settings, situations, processes, devices, or other entities – objects in the widest sense – that generate user experiences. Experiencing something and remembering this experience presupposes a design that deviates from prior expectations. Experience design thus invites users to pose the question: 'What's going on?' (Jantzen et al. 2011). This is done by manipulating one or more of the four dimensions on which bodily presence in the here-and-now relies: time, space, motion, and matter. Scaling is one way to manipulate the users' experience of their own presence. Scaling is extending or compressing time, enlarging, or reducing space, speeding up or slowing down motion and increasing or diminishing matter.

This article examines how the manipulation of *spatial* scales may serve to design experiences by exploring design novices' manipulation of scale in restorying an existing building.

Theoretical concepts

The inclusivist attitude

A scale relates the size of a specific object to the size of something else. Moore and Allen have identified four categories of relationship in scaling (Jantzen et al. 2011, 18): 1) The scale of an object relative to the whole, 2) The scale of an object relative to similar objects,

3) The scale of an object relative to usual size and 4) The scale of an object relative to human size.

The scale intuitively applied in perceiving an object determines how this object will be experienced. The experiential value of an object depends on whether it is perceived to correspond to what was expected or not. The more it deviates from expectations the higher its experiential value.

This implies scales in two respects. In the first place, experiential value is related to normality. High normality corresponds with lower experiential value, while low normality – i.e., irregularity, distortion, or novelty – corresponds with higher value generating positive or negative affects. In second place, the collision of spatial scales may generate surprise and even astonishment, which are tokens of an experienced diminished normality. According to Moore and Allen, this collision occurs when some scales correspond to normality, while others deviate.

Architecture that promotes the oscillation between normalcy and surprise or certainty and uncertainty is characterized by an "inclusivist attitude", because "it includes the observer by urging him or her to ask a question" (Moore and Allen 1976, 22). The design of an experience strives for the same attitude by simultaneously being known and unknown thus inviting users to ask themselves 'What's going on?' (Jantzen et al. 2011).

"Space" and "Place"

This inclusivist attitude can be promoted by colliding the two fundamental forms of spatial organization suggested by Yi-Fu Tuan (1975). He distinguishes between "space" and "place", where "place" is assigned with home-like qualities: it's familiar, stable, certain, and well known by its users. "Place" is constructed by past experiences. "Space" on the contrary, are future possibilities. It is undetermined and therefore unpredictable, unstable, uncertain, and not yet known by its users. This distinction between "space" and "place" outlines two different strategies for experience design aiming at an inclusivist attitude. The designer could either add qualities of "space" to "place"-like surroundings or s/he could add qualities of "place" to a "space"-like environment (Jantzen & Rasmussen 2014). The first strategy implies the *de-familiarization* of aspects of the well-known so everyday existence may be experi-

enced anew (Shklovsky 2012). Thus restoried. The latter strategy implies the *familiarization* of aspects of the unknown to create some form of stability that may encourage users to explore those promises for future existence that "space" seems to make. Our paper will therefore study how novices apply scaling to create this oscillation between "space" and "place".

The design of the study

The novices

Our population consisted of 65 students in Communication & Digital Media at Aalborg University. They were bachelor students in their 5th semester participating in an obligatory 6 weeks' introductory design course "Experiences, time & place". The purpose of the course was to train students to design an analog and/or digital solution for a specific building. The first half of the course mainly consisted of lectures and workshops on theoretical as well as methodological topics. The theoretical part introduced basic theories for experience design. One lecture on spatiality presented Tuan's distinction between "space" and "place" (1975). At no point were the students initiated in the concept of scale. The methodological lectures introduced the students systematically to design theories.

In the second half of the course, the students did PBL-based group work on their project (De Graaf & Kolmos 2003) based on a design brief co-developed by the case-partner and one of the researchers. There were 17 groups, most groups consisted of four or five students. The groups came up with a design solution and produced a written report explaining and reflecting on the theoretical and methodological underpinnings of this solution. The solution had to relate to a design brief. All students worked on the same predefined problem.

The design brief

The case concerned the site of a former distillery in Aalborg. Most of the building's content has already been programmed. The site will consist of an art center, a hotel, several restaurants, a microbrewery, -distillery, and -chocolate factory as well as luxury apartments. But the future function of the former malt house is undetermined. This building has 4 decks and measures 3300 square meters

in sum. The lower floor is 825 square meters, its dimensions being 68 meters long, 12 meters wide, and 7.5 meters high.

Figure 1: Illustration of the malt house (Illustration by Spritten A/S)

Apart from a stairwell in one end of the building, this floor is an open space with 18 concrete columns, bearing the construction of the building. The brief for the students' projects was thus to design a proposal for this building that might add experiential value to the whole site. As a minimum, the student projects should contain a new program for the ground floor, but the other decks could also be taken into consideration. This new program should not include housing or cannibalize the programmed activities for the rest of the site.

Data analysis

We addressed two data sets: firstly, PowerPoint slides handed in by the student groups and secondly their written reports. Many proposals showed similarity in that their overall idea resembled designs that already exist in late modern "Experience City" (Marling et al. 2009) while few were unique. Applying the experiential value scale to these ideas, significantly more proposals tended towards the normality than towards the abnormality pole. This scale covered the span from the familiar to the unfamiliar: from conventional suggestions, which are common in a city landscape like cafes, lounges, music stages, etc., to extraordinary and spectacular con-

stellations. Seven proposals were close to the familiarity pole, four were close to the unfamiliarity pole, and the remaining six were somewhere in between.

The next step was analyzing how spatial scaling could help explain this distribution by scrutinizing their written reports as annotated portfolios (Gaver & Bowers 2012). This made it possible for us to comprehend the data while still paying attention to the significant decisions made within each design proposal and accompanying these with brief textual annotations as suggested by Löwgren (2013). We individually re-read our own groups' reports focusing on the role of scaling by examining how each proposal dealt with the four categories of relationship in spatial scaling (Moore & Allen 1976) and with "space" and "place" (Tuan 1975). From this, we deduced fundamental principle of Fluctuation and four design principles relating to scale: Compartmentalization, Condensation, Expandation, and Miniaturization.

Scale-oriented design principles

Early in the course, students made a one-hour tour to the site. The developer showed them around and told them how the future of each building was programmed. The last 25 minutes of the tour was spent in the malt house, on the ground floor, and on two of the upper decks. Here, the students were confronted with "space" in the Tuanian sense. They experienced the empty vastness and indeterminacy of the ground floor. The lighting and heating contributed to this impression.

Figure 2: Photography of the inside of the malt house (Photo by Søren Bolvig Poulsen)

The spatial immensity combined with the chilliness and obscure lighting was experienced on a scale from 'still alien to human existence' to 'yet infinitely open to imagination'.

The fundamental principle: FLUCTUATION

Fluctuation is the fundamental design principle when it comes to scaling in designing experiences: The inclusivist attitude invites users to perpetually shift their perspective between familiarity and unfamiliarity. Experiencing "space" as alien implies sensing it as existentially "nothing": i.e., without contact with the observer's own past and present, not only physically empty but also devoid of meaning. No story. From this perspective, the spatial design should focus on making "space" existentially relevant, which means turning it into something that could become sensed as "place". "Place" is something to feel comfortable with because it meets your expectations and affords a connection. This explains why the humanizing design efforts by many of the groups tended to turn "space" into something conventional: something more usual and even quite ordinary by applying the familiarizing strategy.

Some groups, though, came up with extraordinary design solutions that exceeded expectations and therefore could be experienced as spectacular and unique. Their point of departure was rather the openness of "space" than its alien character. "Space" was not conceived as "nothing" but as potentially "anything": i.e., open to everything. These groups' design effort tended towards turning this unspecified anything into a specified something but now specified unusual. "Specified unusual" means open to imagination and curiosity (unusual) but within a defined, closely delimited field (specified). Being "specified unusual" enables human agency, which is a prerequisite for the inclusivist attitude of posing the question, 'What is this?'. Hence, invoking a story.

Experience design could thus be characterized as a practice aimed at turning "nothing" and "anything" into something that fluctuates between the usual and unusual, between certainty and uncertainty, between "place" and "space". Successful design of experiences is neither too usual nor too unusual, but rather something that keeps this scale in check for a possible new story to emerge.

Figure 3 Familiarity. (Illustration by Stine Geipel Frederiksen, Louise Simonsen, Clara Bolther Behrens, Isabella Oddermose Villadsen and Linda Mojtehedzadeh) and Figure 4 Unfamiliarity (Illustration by Mette Vestergaard Fomsgaard, Maria Blach Rossen Bjerring, Katrine Brix Christiansen, Annemette Rasmussen and Nanna Heidemann Jensen). Illustrations illuminating the difference between the students´ "place" and "space" making.

For a new story to emerge, experience design is about challenging its users' pre-conceptions without providing easy answers (e.g., 'This is what it is'). But this deferral must be designed in such a way that the question posed – 'What's going on?' – is nonetheless manageable by presupposing some kind of familiarity embedded in what seems unfamiliar.

The principle of COMPARTMENTALIZATION

Almost all groups striving for some kind of familiarization (13 out of 14) divided the ground floor into smaller areas. We call this design principle, *compartmentalization*: the partitioning of space into smaller sections (rooms), each section typically dedicated to one specific activity. The purpose of this principle is to reduce the immensity of "space". On an abstract level, the designs came to resemble a modern, suburban home, where each room has its own distinctive function. The idea was clearly to generate "place"-like qualities. For example, many proposals included a lounge. A recurrent theme for the designs was to create "third places" or a "home-away-from-home"-atmosphere (Oldenburg 1999). One proposal designed a student workspace for group work, informal places for socializing and relaxing as well as Zen-like spaces for contemplation.

Figure 5: Principle of compartmentalization (Illustration by Emma Bollerup Christensen, Josefine Marie Bengtsen, Daniel Kaj Taylor, and Benedicte Ambæk Flach). The students often created compartmentalization by dividing the ground floor into smaller areas as seen in this illustration of the interior design for a flower workshop.

The principle of CONDENSATION

Only one group with a more conventional proposal did not explicitly apply compartmentalization. These students envisaged a wintergarden-like design with flowers, bushes, tree, trails, benches, etc.. This, too, would seem a familiar idea to most visitors. The unusual size of the ground floor was in this case not tackled by partitioning it, but by filling it with objects. We call this design principle, *condensation*: the eradication of emptiness by accumulating objects that are familiar relative to their usual size (flowers, bushes, trees) as well as the human size (trails, benches).

Figure 6: Principle of condensation (Illustration by Julia Juma Pedersen, Jeppe Højfeldt Jørgensen, Amanda Würtz Bunk, Ida Isager Veng Valentin, and Sander Toscano Pedersen). The students filled the ground floor to eradicate the emptiness and invoke an atmosphere of place.

The principle of EXPANDATION

Four designs took an opposite approach to the "space"-like qualities of the ground floor. Rather than reducing the immensity or turning the emptiness of "space" ("nothing") into something "place"-like (i.e., something more usual), these few designs transformed infinite possibilities ("anything") into something specific while maintaining "space"-like aspects (i.e., something "specified unusual"). The relative sparsity of this type of proposal does not allow for any exhaustive mapping of design principles that preserve remnants of unfamiliarity in the scaling of the design. Nonetheless, we could identify the outline of two distinct principles.

The first one operated as the opposite of compartmentalization by extending the unusual scale of the ground floor. This "space" became part of an even larger scale, expanding beyond the physical limits of the original ground floor. We call this design principle, *expandation*: its basic idea is not to rein "space" by partitioning or densifying it, but by showing that it is part of an even larger, conceivably even more uncontrollable "space". Two of the proposals used large scale audiovisual projections on the walls to illustrate this effect. In the first case landscapes and natural phenomena were projected: e.g., a mountainous area, a wildfire, or a tempest at sea (see fig. 7).

Figure 7: Principle of expandation (Illustration by Rebekka Luna Risom, Marc Nielsen, Peter Dahl Andersen, and Mike Bromberg Olsen). A more unusual proposal where space is expanded beyond the physical confines of the ground floor by means of audio-visual projections.

These projections extended the immensity of "space" by making it part of a larger scenery. It became a "place" in "space" either as some privileged vantage point from where the distant landscape could be contemplated and its details scrutinized or as the center in a vertigo, the last point of stability in an engulfing or enraging storm nearby. This overwhelming effect was even more pronounced in the second case, where the scenery was neither at a safe distance or threatening close. Inspired by *Carrières des Lumières* (Les Baux-de-Provence, France), the visitor was immersed in the audiovisual installation, which dramatized the life of workers at the former distillery (see fig. 4). The projections were not only on the walls but also on the ceiling, the pillars, and the floor. The projections seemed to encapsulate and penetrate the spectator by submerging them in the audiovisual universe. Abstract "space" became an actual place where spectators were made aware of their own bodily presence, their existence in a here-and-now – a "place". In these proposals, forces of nature and the lives of others were made sensually palpable. This purpose was also evident in the third proposal, a water exhibition, which comprised the whole building. The centerpiece of this design was an installation descending from the roof to the ground-floor in the middle of the building, "Nedfaldet" ("the Downfall" or "the Downpour").

This installation required big holes in the ceilings of each floor, thereby connecting and extending the experience of the ground floor to potentially encompassing the whole building.

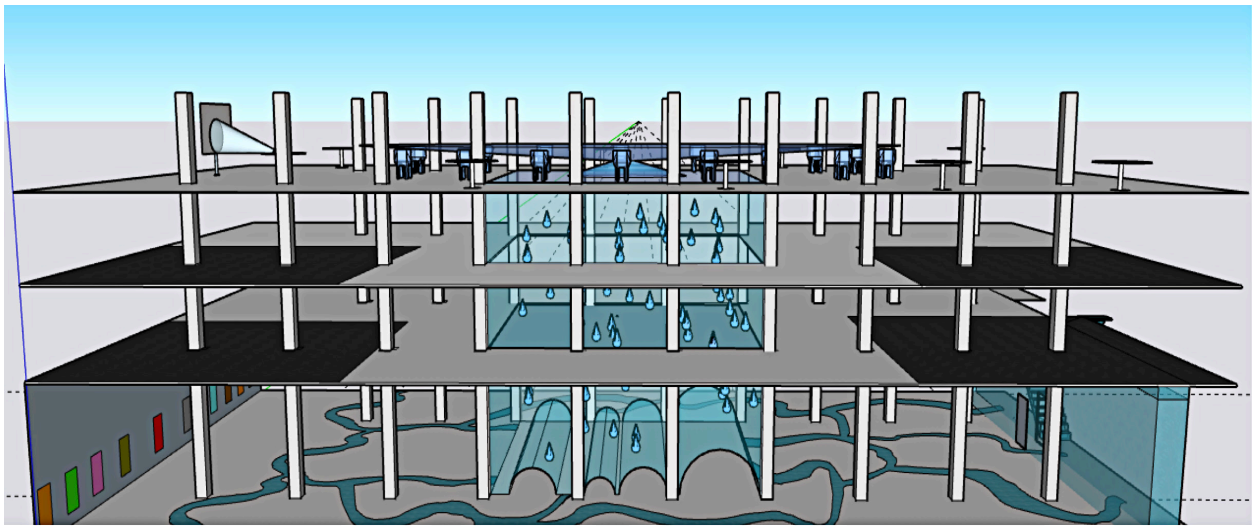

Figure 8: Principle of expandation (Illustration by Mia Ramskov Poulsen, Maja Rasmussen, Sofie Rindom, and Johannes Grunnet Sørensen). A rather unique proposal where the space was expanded by creating a centered shaft through the entire building allowing for a downpour of water.

In this case, the unusual scale was expanded, invoking curiosity about the activities on the upper floors as well as beneath the fall.

The principle of MINIATURIZATION

We found one example in the design proposals of another design principle, *miniaturization*. The working of this principle is comparable to condensation in that it neither partitions nor enlarges "space", but rather veils it by using objects as props for creating a different scale. Whereas condensation blurs the emptiness of "space", "space" in miniaturization becomes the frame for magnifying the human body. This is the attraction of Legoland and similar miniature scales. Objects that normally appear large compared to the human body (houses, roads, trains, etc.), suddenly appear smaller and therefore more manageable. One of the proposals, "Play around the world", utilized this principle by presenting a diminished and radically edited version of the world. Only some few highlights from across the globe were presented, and this was done in a starkly reduced form. The world was compressed to fifteen locations, France was reduced to the Eiffel Tower and Greenland to an iceberg, both objects miniature representations of the real thing (figure 9).

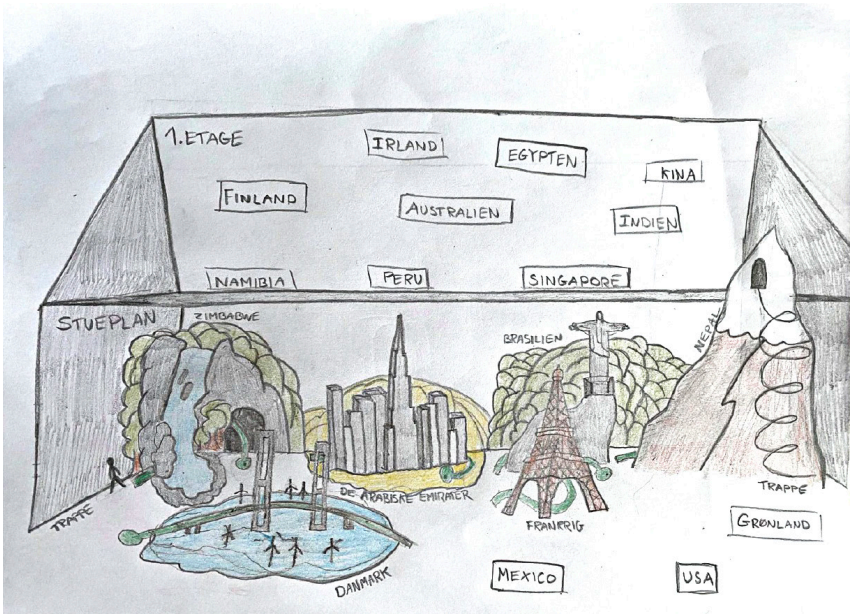

Figure 9: Principle of miniaturization (Illustration by Julie Bo Jonsson, Emma Kjærsgaard Worup, Henry Phong Pham, Peter Pjengaard Pedersen, and Nicklas Johannes Holk). In the proposal of Play around the world, the design reduces space in an unfamiliar way with the effect of magnifying the human body.

This is mentally gratifying because it appears to make human agency the locus of control over objects that are usually difficult to manage. At the same time, the illusion is apparent, thereby creating a doubled perspective: the world that is presented to me, is virtual and unreal, but I, in my bodily existence, am present in this world – and I am real. I am true to size, and even though the surrounding "space" is oversized compared to me, the objects contained within it are distinctly undersized.

Two strategies, four principles

Fluctuation is the fundamental principle of experience design. Experience design should ideally strive for an oscillation between perceptual uncertainty and some clearly perceptible order. Two different strategies help generate this oscillation: familiarization and de-familiarization. The four additional scale-oriented principles are ways to either familiarize or de-familiarize a design proposal. Familiarizing principles aim at transforming "space" into "place": i.e., to make something immense and empty – a nothingness, alien to human existence – more homely. *Compartmentalization* and *condensation* make "space" more usual. They adapt space to a human-like scale, thereby enabling the observer to relate it to his or her own existence. This generates some form of perceptual stability. De-familiarizing principles, on the other hand, prolong perceptual instability by keeping the spatial lay-out unusual or by tampering with the relationship of objects to the human size. These principles aim at turning the infinite possibilities of "space" – being potentially anything – into something specific, but still unusual: something "specified unusual". De-familiarizing principles produce a doubled perspective of simultaneous certitude and incertitude, of bodily reality and virtuality. The principles of *expandation* and *miniaturization* both pursued this de-familiarizing strategy.

Of these four principles, two of them operate on the immensity of "space". The first one, *compartmentalization*, reduces this immensity to smaller, more usual parts. The second one, *expandation*, enlarges the dimensions by simulating that this "space" is but a part of a gigantic immensity transforming the original "space" (a whole) into a "place" amidst a much larger "space" (a new, even more gigantic whole). The two other principles operate on the emptiness of "space". The first one, *condensation*, fills "space" with objects of their usual size that by their sheer mass veil the vacancy of "space". The second one, *miniaturization*, fills space with objects of an unusual,

much smaller size, thereby enlarging the appearance of the human size and making "space" a habitable "place".

The logical relationships between these four principles is summarized in the following table that shows the similarities and the differences between each of them:

		Operating on the immensity of "space"	**Operating on the emptiness of "space"**
Strategy of familiarization	Fundamental principle of Fluctuation ↕	Principle of Compartmentalization	Principle of Condensation
Strategy of de-familiarization		Principle of Expandation	Principle of Miniaturization

Table 1: The four restorying and scale-oriented design principles.

At first glance, opting for de-familiarizing scale-oriented principles might seem the obvious way for experience design to go. But scale-oriented principles based on familiarization may also produce successful designs of experiential value. Manipulating spatial scales is just one way of upsetting expectations. Tampering with the location, the material qualities (with for example their substance and weight), the habitual sequence, the accustomed order or the ordinary movement of objects may also make these objects seem unusual, resulting in an oscillation between familiarity and unfamiliarity.

On the other hand, this oscillation requires some stabilizing counterbalance when applying de-familiarizing scale-oriented principles in experience design. The "specified unusual" is still in need of some recognizable features to be manageable. In our students' more extraordinary proposals, this counterbalance was typically created by their selection of objects for adorning or dressing-up the spatial design. These objects were easily recognizable for what they were: e.g., bushes and benches were of a shape and scale like shrubbery and furniture in the 'real' world (see fig. 7). They thus prevented the design from becoming altogether 'alien'. This highlights an important point in the inclusivist attitude: this attitude is promoted not by transgressing all expected scales, but only by violating some of them.

CONCLUSION

The purpose of this paper has been to identify how spatial scaling might be used to restory an environment. By studying the work of design novices, we analyzed how scaling was applied in constructing a coherent proposal and learned about the natural way in which scales are utilized when the task of managing space for the design of future experiences must be solved. Five principles emerged from our research, which could provide a systematic method for restorying a building as either more familiar or more unfamiliar, more homely ("a place") or more alien ("space").

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The making of a beach

Ecosystem services as mediator in the Anthropocene

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Abstract

In the Anthropocene, it becomes problematic to imagine a sustainable balance between society and the environment. This calls for post-sustainability modes of articulating human/non-human relationships. As an attempt towards an Anthropocenic understanding of society and the environment, we analyse how ecosystem services are mobilised in marine spatial planning in the south of Sweden. The study investigates how ecosystem services are understood and narrated in environmental strategy and interviews with environmental planners. We focus on seaweed and sand. These are two kinds of materials and potential resources that materially circulate

and force together society and the environment in planning discourse and practice. Our findings show that although ecosystem services are readily understood as an anthropocentric construction, when mobilised in planning to manage an unruly nature they can be re-storied as an ontological mediator in human/non-human relations.

Keywords: Anthropocene, ecosystem services, environmental planning, post-sustainability, ontology

Introduction

In the novel *The City & The City* by China Miéville (2009), two different cities exist at the same place and at the same time, but still separated from each other. The cities are topographically overlapping but with different populations, languages and cultures. The border between the cities can be officially crossed at one sanctioned passage only, closely guarded by authorities from both territories. But the border is also porous; there are several 'windows', or rifts, where inhabitants from both sides can see into the other city. It is also physically possible to breach the border through these windows. However, citizens have been strongly socialised to not look directly into the windows, and instead immediately 'unsee' and 'unhear' all sensory spillover across the border. The physical crossover through the rifts is utterly unimaginable for most people.

Miéville's novel can be read as an allegory over the modernist ontological separation between society and the environment (Latour 1993) in sustainability discourse. Society and the environment are constructed as separate spheres, where the major sanctioned crossing might be thought of as the extraction of resources by society from the environment. Traffic in the other direction – from society to the environment – can then be imagined as all possible tropes about sustainability grounded in a thought-model where control over the material balance between society and the environment is fundamental.

Our aim in this article is to dissolve the ontological separation between society and the environment. To do this, we use the case of ecosystem services in marine spatial planning. The so-called blue economy (Balina et al. 2017) is proposed as the frontier for new sustainable resource narratives. However, the sea is polluted and over-

exploited at an unprecedented scale, and rising sea levels is an obvious threat to societies due to climate change. The sea is a paradoxical space, pointing to a more pressing, theoretically driven reason for our contribution. This is an existential issue, because of the post-sustainability conditions emerging with the recognition of the Anthropocene: When human activities have become the dominant force of planetary and atmospheric change, it becomes increasingly non-sensical to uphold a separation between human and non-human domains (Castree 2003, 2020; Law 2015; Latour 2017; Fremaux 2019; Kolinjivadi 2019; DePuy et al. 2021). But individuals living in extractive societies (capitalist or not) cannot easily acknowledge this; we have been socialised to unsee the ontological overlap, we have no precise language to express it (Gray 2010). Addressing this barrier, we show empirically how ecosystem services are both an illustrative and a conceptually important arena for re-storying society and the environment in the Anthropocene.

Ecosystem services and the organisation of seaweed and sand

The values of marine resources can be manifest or potential, and they can appear as abundant or scarce. To even become resources, they must be made visible and narrated (see Hines 1988, for the social constructivist basis for such an argument). A way to systematically categorise the values of natural resources is through the concept of ecosystem services (Gunton et al. 2017), understood as the benefits society can gain from the environment. But as Barnaud and Antona (2014) demonstrate, the concept of ecosystem services is unresolved. At face value, ecosystem services express a separation between society and nature, a way of externalising, formalising and economising nature (McElwee 2017; Thorén and Stålhammar 2018) in terms of a range of different transactions – regulating, provisioning, supporting and cultural – between society and the environment. In this framing, ecosystem services are an anthropocentric tool to uphold societal autonomy from, and control over, nature. But at the same time, and originally (Daily et al. 2009; Costanza et al. 2017), ecosystem services also serve an important communicative purpose. It is a way to put words and numbers to measurable as well as non-measurable interdependencies and values to make them commensurable within the same frame of reference (Bullock

et al. 2018; Cheng et al. 2019). Driving this point further, calls for a less anthropocentric and a more care-based, ecocentric approach to ecosystem services have recently been raised (Muradian and Gomez-Baggethun 2021).

By focusing on 'the making of a beach' we analyse how marine spatial planning in the south of Sweden is organised through ecosystem services. Our approach is that environmental values do not arise a priori from ecosystems, 'but are co-constructed through the interaction between people and their environments' (Fish et al. 2016:330), and therefore a social construction in constant flux (Barnaud and Antona 2014). Ecosystem services harbour a range of different values in the planning and management of sea and coast. When different categories of values – societal and environmental, measurable and non-measurable – are made to co-exist in the same management system, this challenges a monolithic understanding of ecosystems (Abson et al. 2014; Fletcher 2020). It raises the question of what values gain legitimacy in time and space in relation to other values (Kull et al. 2015). Socio-cultural and ecological values respectively enhance each other in some places over time, but in other time-space locations they block each other. But the relation is not static; coasts are dynamic and literally move around. To illustrate values in this unruly context, we focus on seaweed and sand. These are two kinds of materials that are in constant discursive and material circulation and thereby force together society and the environment in planning narratives.

Method

The empirical material comprises semi-structured, open-ended interviews with four environmental planners from one coastal municipality in the south of Sweden. The interviews were transcribed into text and manually coded. The analysis also includes one document, a presentation of environmental planning strategy for the public and other stakeholders. This document, The Coastal Program, is a knowledge inventory and a 'cross-sectoral description of values and processes'. The aim is 'to create an overall picture that is important for future priorities and measurement'. The document was also manually coded. The coding resulted in content categories such as seaweed, sand, ecosystem services, and ecological and socio-cultural values.

We approach the empirical material through a functional discourse analysis. Discourse is a socially constructed way of knowing some aspects of reality and a context-specific framework for making sense of things (van Leeuwen 2016). We frame the interviews and the document as the total corpus of text, treated as one narrative. In this analysis, discourse is not understood as a strict system of concepts or objects, but as a set of relationships existing between discursive events (Wodak 2008). This is a functional approach enabling the identification of both static and dynamic relationships between discursive events, that is, the interviews and the document. The analysed discourse is an account of 'the making of a beach'.

The making of a beach

For the municipality, the beach is a critical selling point towards its residents and visitors alike. The beach must be organised by planning; left to itself, its cultural and economic values would disappear in less than a season. We can understand the beach as an artefact, in line with the conditions of the Anthropocene. The circulation of seaweed and sand caused by winds, waves and sea currents must be parried by planting schemes to bind the sand dunes, the manual transportation of sand from the sea to the beach, the removal of seaweed to a storage place away from the beach in summer, and its return to the beach in winter. This constant circulation of seaweed and sand creates values, potentials and problems. In its strategic marine planning, the municipality articulates priorities of management and use in order to realise, for example, the cultural ecosystem service of 'quality of life' manifested as rows of picturesque bathing huts. By the management of seaweed and sand to preserve 'quality of life', the municipality can also discursively and in practice point to ecological values such as biodiversity and flood protection.

Narrating values

The Coastal Program states that the beaches are an important part of the municipality´s identity. This announces values based on general notions of what people in general refer to as valuable. It needs no explanation or argumentation more than that beaches are highly appreciated places for recreation. These values are also under threat, and, since the values are shared and common standpoints, so are the threats: "Threats to the beach's attractiveness are factors

that make it less possible to use them for recreation, such as smelly seaweed, stray dogs, and the general concern that the beach will be eaten up by the sea." (The Coastal Program).

But seaweed can be used as protection against erosion. What is bad for the identity of the destination can be good for the making of a beach. Benefits and threats are verbalised in a specific context and therefore considered as political issues because of how values, connected to a place, are dependent on particular vested interests and foci. Socio-cultural values can be used as a middle ground when it becomes hard to justify values economically, such as logistic solutions to move seaweed between different locations:

> Seaweed has the potential to be refined and used as a natural resource, but it is not clear how the seaweed can be organised and refined. The municipality's previous tests have not shown that any processing method is particularly simple or efficient. There is also a risk that environmental benefits are challenged by long transports and high costs. For this reason, the municipality needs to create a future organization that can be justified on the basis of environmental impact and finances. The possibility of restoring the old seaweed dikes could also be a way to take care of seaweed and at the same time strengthen cultural values. (The Coastal Program).

The municipality assesses the ecological and socio-cultural potentials simultaneously by emphasising the possibility to restore old seaweed dikes; understanding cultural heritage as an ecosystem service requires simultaneous consideration of ecological and cultural contexts. When engaging with the public it became obvious that people had interest in restoring the old seaweed dikes. When socio-cultural aspects are included in the planning processes, it often creates engagement and even acceptance towards the more invisible parts of ecosystem services.

Sand migration is a recurring theme in the Coastal Program. The fine-grained sand is easily transported by wind and currents, which is associated with a certain risk. There is a negative net balance of sand: more sand disappears than what is added to the area. As sand circulates, the value of sand is linked to the dynamic movement

that is able to add as much sand to the area as it removes. Socio-cultural values interact with environmental values, and these values reinforce each other only if nature's movements are favourable and rhythmic.

Socio-cultural values are often emphasised more than environmental values in the document and interviews. All beaches are associated with recreation and must be taken care of. If the shore is covered with enough sand it is per definition a beach, and therefore requires planning and management. The Coastal Program states that the coastline is subject to rapid change. More sand disappears than what is added, and large amounts of sand must be manually transported to the shoreline from other locations in order not to affect the value of the beaches negatively. The net balance of sand, and its circulation, is intimately tied to the placement and movement of bathing huts, and the huts are a key landscape feature for the value of cultural ecosystem services. The bathing huts are perceived as central in the making of a beach since they *de facto* identify the shoreline as a beach and tell the story of how the municipality was established as a seaside resort.

The acute risk of erosion and legislative issues combine to make the displacement of bathing huts a complex and problematic question. The value of cultural ecosystem services becomes interwoven with a larger ecosystem in constant change. Historically, the bathing huts had a practical purpose; recreation and the hiding of the naked body while changing clothes. Today, they still have this purpose, but are also a cultural heritage. As such, the huts are of strategic value. One respondent puts it simply: 'From the strategic perspective it is clearly stated that we need beach management.' Both bathing huts and beaches are posts in the municipal budget, and the respondent refers to this as a strategic decision to deal with the fact that the value of cultural ecosystem services are not calculable in terms of monetary value.

This strategic approach is able to include what people actually care about without demanding economisation. The management of the circulation of sand and seaweed thus makes visible the overlapping of society and the environment; by organising the dynamics of ecological ecosystem services, cultural heritage and quality of life are temporarily maintained.

The ambiguous work of managing seaweed

The demand from locals to keep the beaches clean from seaweed results in intense dialogue. The municipality is responsible for keeping the beaches tidy and clean, and if the beach is not cleared of seaweed, there will be complaints. Performatively, according to local regulations, all beaches are actually 'beaches'. But it is the clearing away of seaweed that makes a beach in practice:

> On the beach, we sort out the rubbish. And then we take away the seaweed. There is extremely much seaweed in the spring in some places. Then we drive in with an excavator and dig it away. The mental picture of what our beaches look like on a nice, sunny day in July does not really correspond to reality. If we hadn´t cleaned and prepared, we would have a completely different beach environment.

When the currents for several weeks have pushed the seaweed up on a specific beach, it is difficult to keep it clean. Organizing seaweed usually involves a spring cleaning in May to get rid of the seaweed that came in during the winter: "And then we put it in temporary storage places. Pretty close to the beach. Large piles of seaweed. And then we drive the seaweed back into the sea in the autumn. It´s the most economically sustainable way we have found. This is how our work looks today."

That the seaweed is a problem for the municipality becomes clear when environmental planners tell the story about how they handle it. The same pile of seaweed can be defined as waste in up to three iterative rounds. The first time when it lies on the beach (waste on the beach), the second time when it is driven away and placed in a hidden storage place (waste on land), and the third time when the same seaweed pile is transported back to the sea (waste on land dumped in the sea). Despite attempts to find places where as few people as possible come into contact with the seaweed piles, both visitors and locals still experience the seaweed as waste 'when you see the pile'.

The Coastal Program focus on strategic dimensions associated with the circulation and management of sand and seaweed where different ecosystem services collide (The Coastal Program):

> The sand dune environment, for example, harbours many important ecosystem services such as flood protection, biological diversity, recreation, and experiences of nature. This environment is complicated in that it is under constant transformation and is formed by different types of nature with varying fragility and need for care, at the same time as it is a popular recreational area /---/ Seaweed plays a central role both in the sea and on land. In the sea it offers mating and hunting grounds, and protection. On land it can protect from erosion. Rotting seaweed affects the attraction of beaches by smell and preventing bathing. Mixed with the seaweed is also a significant amount of rubbish from both visitors and the sea.

The importance of the beach – without seaweed – as a cultural ecosystem service is here presented as self-evident. Seaweed is not able to deliver any value to the beach that can be classified as an ecosystem service. Instead, the absence of seaweed is the basis for providing cultural ecosystem services.

During one interview, the respondent reflected over a certain lack of knowledge among planners about the meaning of ecosystem services and how to use them discursively and in practice:

> It is in part a matter of competence among us planners; everyone does not know what an ecosystem service is. They are not comfortable using them. It's not really part of your experience or your education. So this is quite a big thing. /---/ but then we have a political decision that we should work with ecosystem services in all relevant plans and programs. The result is that we don't have like a smooth way of doing things. How do we talk about ecosystem services? How do we use this concept… in our planning?

The ambiguity is obvious and acknowledged by the planners. Even though there is a lack of knowledge among planners, their work is guided by a political decision to work with ecosystem services in planning. The Coastal Program explains this by the relevance to

better illustrate what the natural environment contributes with to society and its importance for humans.

Before the pandemic, the municipal planning division arranged an event for the public with the purpose of educating the public about marine and coastal planning. It was, in the words of the respondent, an 'ingenious event' taking place at the actual beach where children were encouraged to use a fishing rod in a fishpond (the kind common at children's birthday parties). The 'prize' in this fishing expedition was not a bag of candy but a description of an ecosystem service attached to a yellow plastic duck. By associating ecosystem services with a party, the planners accomplished several things. The event targeted children, who, in order to understand the descriptions, engaged their grown-ups. Municipal ecologists were present to explain the concept of ecosystem services to both children and adults. At the same time, seaweed, sand, and beach finds were displayed to facilitate new understandings of the sea and coastal environment. Two generations were simultaneously, *in situ*, being made aware of how the window between two different ontological domains – society and the environment – suddenly opened to show their simultaneousness in time and space. An Anthropocenic moment: ecosystem services attached to plastic as a transformative practice on a beach in constant peril to narrate the spatial and ontological overlap between society and the environment.

Conclusions

The ambition in this study has been to re-story the complex relationality between society and environment, in this case through the concept of ecosystem services. The value of ecosystem services for society demands organisation and management. Different ecosystem services simultaneously support and inhibit each other. The making of a beach specifically identifies values in constant motion in time and space since sand and seaweed circulate. To breach the ontological divide between society and the environment, the ability to narrate the outcome of such dynamic relationships is one key issue for environmental planning in the Anthropocene. The social acceptance and engagement for invisible ecosystem services in the ecological sense in planning and decision-making is facilitated when these are embedded and presented in socio-cultural contexts. The identification and articulation of certain values creates engage-

ment with specific ecosystem services. When it comes to the circulating sand, cultural ecosystem services interact with environmental ones. The making of a beach is a transformative process that activates a range of different values, and the symbolism of the bathing huts, with roots in a different context, becomes a prioritised cultural heritage in the municipal planning strategy. Here, the understanding of ecosystem services as a one-way flow of benefits from nature is hard to maintain. Instead, ecosystem services transcend the ontological separation between domains. In the pragmatics of environmental planning, ecosystem services are not a tool for upholding the autonomy of society from the environment. Quite the opposite; their mobilization demonstrates a relational ontology where society and the environment continuously create each other, a state of flux in no need to be pinned down.

This relational ontology was manifested in the case of the yellow plastic ducks. Socio-cultural aspects were staged as the pedagogical apparatus aimed at creating understanding and engagement, rather than being part of the ecosystem service complex in itself. The mobilisation of ecosystem services in the shape of toys can in this sense be understood as an attempt open a rift to re-story society and the environment in terms of ontological relationality. Ecosystem services – no longer an anthropocentric concept describing a one-way flow of benefits from nature to society – appears as a mediator between different ontologies. Fishing in the playful way described above is for many associated with catching a prize, which in this case can be understood as a re-storying practice. Ecosystem services is the prize for socio-cultural sensibility in awareness of Anthropocenic nature. This is neither a trivial conclusion, nor a very complex one. But it is, we would argue, a demonstration of how to dissolve the ontological divide between society and the environment and begin to tell the story of a post-sustainability world.

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What could the Railway teach us about Progress?

Terrestrial trains and spiritual railway wagons

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Abstract

Propelled by steel, charcoal and steam the railway once carried the story of progress and the rise of the developed modern society. While the orient express nurtured a vivid, mythical aura during more than a hundred years, it seems like future stories about the railway mainly gravitate around hyperloops and increased speed. How come the narratives around railways have become so futile? How come imaginaries about progress have got stuck? With the help of critical imagination and the method of design fiction, this article will set out on an imaginary journey to re-storying the future railway and discuss how this could help us rethink progress. Alternative paths will be explored that allow room for stories depicting train rides in slower paces and complex rhythms and materials, a rich melting pot for diverse and vivid sub-cultures, bottom up grassroot services, experimental sharing cultures, touring theater companies, maker movements, and new citizen-driven cooperatives.

Keywords: progress, railway, design fiction, critical imagination, terrestrial

1. Introduction

The notion of progress has had a central position in our globalized world and can be seen as the spiritual foundation of the Western modern society (Escobar 2017, Sbert 2019). Significantly propelled by Enlightenment thinking it offered a new dream and promises that could replace the salvation that Christianity previously had offered (Wagar 1967). While the understanding of progress has varied, transformed, and exists in multiple forms, from early ideas emphasizing a goal-oriented and linear movement towards human perfection, to a conceptualization stressing more open-ended processes mimicking evolution (Bowler 2021), it still carries the idea of some sort of continuous human betterment. This betterment is often connected to advances in science, technology, and economic growth.

At the same time different forms of critique of progress have been raised. For example, that all achieved betterments will be followed by a decline (Spengler 1991, Head 2016). Another issue relates to the complex value production associated with technological development, where new technology often become useful for some, but at the same time harmful for someone else (Bowler 2021). To understand progress as a general all-encompassing process of increased general value will therefore always be limited by the question of what is counted as value, by whom, for whom and whether it simultaneously reduce value for someone somewhere else (Wagar 1967).

Despite all this critique it's not obvious how to move beyond progress, especially in a way that can be understood as desirable for people. As Bruno Latour phrase it "however open to dispute the word "progressive" may be, it is highly unlikely that anyone can be mobilized by a call to "regress". With the "end of progress" the prospect of living less well than one's parents, the project of learning to shrivel up slowly is hardly going to electrify crowds" (Latour 2018, 49).

This article will elaborate on the notion of progress by using design fiction which is an established method in design research to probe, sketch and explore ideas (Bleecker 2022) and that both enable us to think about the future and to critique current practice (Blyth and Encinas 2018). Design fiction can be seen as a bit more

elaborated and detailed version of a thought experiment (that are common in both science and philosophy) but that brings forward experiential qualities to a larger extent (ibid) and elaborate on what interaction rituals these stories allow and disallow" (Bleecker 2022, 8). It can take different shapes; in its simplest form it consists of a written narrative exploring "what if" questions (ibid). More specifically this article will take the railway as a theme and offer a few alternative fictional stories that are written as blog posts from a fictive railway journalist. In line with the notion of critical imagination, these stories will not be oriented towards futuristic techno-optimism, rather they aim to challenge taken for granted assumptions or concepts and explore how things could be different in the present (Lindström et al 2021), in this case exploring the question: how could we imagine progress differently?

2. The railway as an example of progress

When the first public steam railway came to birth almost 200 years ago it got to symbolize industrialism and became the story of progress. Railway tracks were built across Europe and the world, bringing with it the standardization of time and globalization. The orient express nurtured a vivid, mythical aura during more than hundred years, that often far transgressed the literary depictions. A century later the plot in the railway story changed abruptly when cars, airplanes and marketization entered the scene. Suddenly the railway turned out to be a huge rigid inflexible technical system (Meijling 2004), Now, with the extreme predicament of climate change, what new stories could the railway tell us about future progress?

Future looking stories are amazingly poor. One example is the hyperloop, popularized by among others Elon Musk. It consists of a tube with significantly reduced air resistance that allows pods with people to travel at very high speed, propelled by either fans or electromagnetic propulsion systems. As a narrative, this proposal tries to maximize the dis-connection from earth. While inside the tube you don't know if you travel through a beautiful landscape or an industrial dumping ground. The tube could be long or short, distance doesn't matter. The only parameter is time, that ideally is reduced to a minimum. As stated in Elon Musk's white paper, it will be immune to weather and not disruptive to those along the route (Musk 2013).

Through the method of design fiction a few short fictional blog posts will now be shared. The first will invert the hyper-loop and go as long as possible in the other direction, trying to imagine a terrestrial railway fully integrated into the soil.

3.1 Railway blog post: The terrestrial train

The terrestrial train takes you from the northern Scandinavia to the south of Europe. The exact route differs depending on seasons. I am entering the train in Copenhagen for a journey to Lisbon in early spring. The terrestrial qualities become evident already when you enter the train. The interior design consists of a wide variety of different wood, wool, hemp, and tile plates that have been produced in different parts of Europe. This is a train made from soil! This is also a journey you should embark upon if you want to evoke your sensorial attention towards the earth, especially through eating amazing food.

Food and beverages are fully synchronized with the route and change according to the regional cuisines that the train passes through. Unlike the commodified local cuisine that you often find in the last-minute tourist shops in airports, the local connection is crafted with high sensitivity. This means that you won't get a curry wurst in Berlin. Rather you will be offered lesser-known local dishes that vary for each departure. For example, after a few hours of travel into Germany we got a small dish based on Milbenkäse. This is a red or black cheese fermented with help of cheese mites which is a local specialty of Saxony-Anhalt. It has got the reputation of being a foodie's train and yes, it is a bit more expensive than most train journeys, but not as much as you would expect. Organically artisan food costs more. However, the train allows both a distribution channel and awareness for the almost three hundred small local producers that are connected to it. This means that they can sell more and therefor also keep prices affordable.

The highlight of this journey is the small detours. One take place in the Loire wine valley where a regenerative farming network a few years ago took the initiative to refurbish an old railway sidetrack. Following this track for a few minutes takes you to a simple and small but very functional railway stop in the midst of the wine district. It's a quite odd feeling to get of a train on small wooden stairs in a rural farming landscape without a proper train platform

or a railway station. The train stops only for one hour, but here you get the opportunity to buy the most amazing locally made cheese, street food stylish meals from local farmers, and locally produced wine. When the train depart it does so in slow speed, and compared to most trains the windows can be fully opened. Together with the other passengers I enjoy my treasures while inhaling scents and listening to the crickets outside.

Another cool feature on this terrestrial journey is that some farmers have planted raspberries, plums, and apples along the track that you can pick directly from the window during a short stop. However, the most spectacular way this train connect itself to the soil happens when long telescopic sticks with strings of honey are brought to the ground. The purpose is to attract jet ants that slowly crawl onto the train. Why would you then want ants on the train you might think? It's a good reason. This ant has become a famous ingredient at the world-famous restaurant Noma. During my journey the catch was modest, and I only got to taste one. A bit odd, but quite tasty with a humble flavor of lemongrass.

A journey like this might sound a bit too romantic and it is not without its flaws. This time it arrived 3 hours later than expected. If you are in a hurry, then you should pick another train.

3.2 Railway blog post: Spiritual train wagons in a maker-space

It has gone some decades since the makers-movement started, gathering enthusiasts that were eager to build, create, make, or repair things. These makers are often organized as local grassroot initiatives sharing knowledge and production equipment in maker spaces. A few years ago, one of these groups got hold of an old train wagon repair workshop in Paris and set out a vision to add more flavors to the often sterile train design. Since then, they have been quite known for their creative and radical design.

Some of them were retired engineers with a long career in the railway sector, while others were young students interested in upcycling furniture or electronics and mechatronics. I got to visit their workshop and met with the founder Daphne Lambert. Since the start she and her colleagues they have been building fifteen different wagons and two more are under construction. It all started

when she met with Emile Fontaine who had been working with interior design at SNCF, the national French railway company.

Both Daphne and Emile were quite fond of trains and together they realized that the new production facilities that had emerged within maker spaces such as 3d printers, laser cutters and milling machines would allow a very flexible and more artisan approach to modify and build train wagons. "It's quite amazing how boring, poor, and expressionless most train designs are. Like airports they often look the same with sterile anonymous materials. We wanted to do something people would remember," she tells me when we are strolling around in the workshop.

When more travelers turned to night trains instead of flying around in Europe, Daphne and Emile also saw a potential to design wagons with specific purposes. For example, when the EU commission launched the cultural boost program to support cultural exchange across Europe, this both allowed culture workers to travel for free on the railway, but also opportunities to earn money during train journeys. This gave them the idea to create a "theater wagon" with a quite flexible stage and props that easily could be reconfigured to allow theater, stand-up comedy, or musical performances. Many new cultural formats also started to emerge that took advantage of the train journey.

I have had the pleasure to travel with one of these wagons a couple of times and my first experience was especially amusing. It all started when two people in my coupe started a dialogue about their relationship that dragged your attention, and quickly became very tense. Gradually you started to realize that this probably was a part of a performance. When one of the persons ran away and the other one desperately asked you to come along and help her, and you suddenly ended up in the theater wagon, then you were already immersed in the play. Daphne tells me that their theater wagons often also have been used by live action role play groups that book a whole train to enact their plays.

We are now entering one of the wagons in the maker-space workshop. It looks different than anything I ever have seen, curved shapes, inviting materials, real moss, and stones on large part of the floor, light wood materials such as birch, and bronze gongs that are hanging from the ceiling. It almost looks like a Japanese Zen Garden, and we need to take of our shoes when we enter into it. Ac-

cording to Daphne, this is their second "spiritual wagon". These wagons have not been built on request from any religious community. Rather Daphne and Emile realized that there was a need for a more meditative break for many passengers during long trips. And they have been very popular among business travelers.

The other wagon in their workshop is a "soundscape wagon", created to allow unique experiences of music. Together with a small experimental musical ensemble they are constructing a whole wagon where acoustic qualities are in the center. "In many ways, the whole wagon can be seen as an instrument" she tells me while she is banging with a stick on different spots on the wall which reveals quite surprising sounds. She explains that the collaborating ensemble will create musical pieces along different routes and they have already signed a contract with a record label that will release an album next year.

The next project after these two will be a wagon with a huge kitchen that allow passengers to take food courses during their trip. They idea is that one or two famous chefs will share their skills, but also that passengers can exchange their own recipes.

3.3 Railway blog post: The Railway Mothers and Edu-Rail

I am now the owner of my own railway company! Something I couldn't imagine a few months ago. I have to admit that I am not the only owner, but rather one of many. The Railway Mothers, Europe's first cooperative railway operator, came to birth as a spin off from the Climate Activist Mothers. I had my first journey a few weeks ago and got to talk with Valeria Rodríguez who was active in the start of the cooperative. She describes how the idea emerged from conflicting interests within their community.

"On one hand we were mothers with a wish to provide our children with opportunities to travel and see the world. On the other hand, we had a strong commitment to reduce CO2 emissions. We realized that we had to do something" she tells me when we drink coffee in the extensive lounge area on their train from Barcelona to Stockholm.

She and some others had been working at Mondragon, a huge Spanish federation of cooperatives and brought that spirit with them into the railway sector. They started with crowdfunding and set up a social media platform to build a community. Initially, they

chartered one train each summer to travel from Spain to Scandinavia. When the community became bigger, they could charter more trains and develop a flexible and agile approach in how to plan routes and journeys. Today they have departures from different parts of Europe every week. Owners must work with on board services on the train or maintenance two days a year.

The train is, not surprisingly, centered around the family. To provide facilities needed by a family they have bought a couple of specially designed wagons. One is specially designed to allow play, sports, and physical activities. Something that comes in handy when you have kids with you on a long journey. They also have a special wagon suited for school and learning activities. Valeria tells me that something they didn't expect was the significant role senior people would have on their trains. Both grandparents and childless elderly have joined as volunteers. Something that have reduced their costs significantly.

I can't stop thinking about the strong male dominance in the railway sector. Still, historically women have had important roles that are forgotten today, for example as crossing keepers.

This initiative will hopefully put women in a more central position in the rail sector.

Now, I will share my experience of another memorable journey I did recently with a new actor in the railway world. It's been a year since Edu-Rail started, a collaboration between 200 of Europe's universities that grows very quickly. Two features make their trains a popular option. One is that the wagons in a flexible way can be reconfigured. A coupe or sleeping compartment can easily be rearranged into a workshop or seminar room. They also have special wagons that can be used for different purposes for example as chemistry or electronic labs. The other cool feature is how journeys are booked. It's common that a research group book a large coupe to be able to work together during a journey. However, they also offer a match-making function where different academic disciplines can come together and work on societal challenges. Professionals from different parts of society can also join these multi-disciplinary teams. This is also how I booked my trip. I joined a theme on "energy democracy" where a group of twenty people elaborated on legal, economical, technical, social, political aspects of how energy production could become more de-centralized, democratized

and grassroot oriented. By allowing opportunities to work on the train Edu-Rail has propelled a significant transition among business travel towards more climate friendly railway transport. It's also influencing how research and innovation practices evolve. For example, different funding bodies in Europe have aligned some calls to these train departures and research conferences have become integrated with the journey to and from the actual location.

4. Discussion

How can we understand progress and betterment in our society? What kind of stories fuel the imaginaries of positive change we can hope for? As Latour state we don't want to regress, and the degrowth movement struggles to engage us (Latour 2018).

However, as demonstrated through the fictional blog posts it's possible to imagine processes of change and increased value in our society that follow another route than the modernist and techno-optimist path of continuous economic growth.

Whereas the dominant stories about the railway mainly gravitate around hyperloops, hovering super high-tech magnetic systems, and increased speed. None of the proposed initiatives in the blog posts require any new, advanced, or costly technology. Rather they can be seen as examples of Gaia storytelling that provide a "deep sense of belonging and rootedness in communities, places and nature's life cycles" (Jørgensen et al. 2021).

As Latour claims, attachment and belonging are central to mobilize care for our planet. However, our belonging needs to reach beyond our local birthplace or place of living. He states that "the Local is much too narrow, too shrunken, to accommodate the multiplicity of beings belonging to the terrestrial world" (Latour 2018, 54). At the same time the planet 'as a whole' is too large to evoke a sense of belonging. Latour instead suggest the term Terrestrial that is bound up to the earth and to land but aligns with no borders. Instead of closing itself off, it opens itself up. The story of the Terrestrial train aimed to elaborate on how such a belonging could be nurtured by connecting us to a diversity of local culture and soil.

This is a stark contrast to the techno-optimist idea of the hyper-loop, which is not just disconnected from the soil, it's also remarkably thin "story wise" (you go into the pod and go out again as soon as possible). With the help of design fiction and critical

imagination the stories elaborated here rather aims to thicken futures (Jönsson, Lindström and Ståhl 2021), by being rich in story generating elements, a way of worlding the world (Haraway 2016).

The limitation of these fictional stories is that they will not be enough to evaluate the ideas that are elaborated. On the other hand, they build on trends and technologies that already are established and that have grown recently. For example, connecting many local food producers to a train could be seen as an example of service design or social innovation. The maker movement have become quite established and allow new opportunities for grass root industrial production. Social media and crowdfunding could support grass root activist groups like the railway mothers. The specific ideas in the fictional stories as such are all viable but their specificities are not the most important. However, what is more important is that they can help us to challenge dominant modernist narratives of techno-optimism and re-story the notion of progress (Blyth and Encinas 2018). This is what the stories are meant to do. All build on collaborative and relational approaches and can help us to understand that we can reduce flying and we don't necessary need hyper-loops, and yet, we can continue to thrive and flourish with surprising new opportunities that add value to our lives. This might also provide us with hope in the sense of an ability to hold and sustain more meaningful forms of action and relationality in the world (Jackson 2019).

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Case Study of a Workshop for the Ecological Redirection of a Public Science Institution

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Abstract

In the face of the environmental and climate crisis, many organisations are being led to branch out, to take a path that shifts away from their original practices towards more sustainable futures. A variety of initiatives have emerged as a result of such concerns, aiming to facilitate that sought-after change. I shall explore how the use of collaborative workshops can be a tool in these environmental transition dynamics to support a practice of ecological redirection. In that context, this paper discusses the case of a speculative workshop that was designed in the context of the ecological redirection of the French Cité des Sciences et de l'Industrie. A particular focus is given to the design process of the workshop aiming to enhance the overlooked voices of local environmental activists and the tools that were developed in that context, proposing a methodology for a transition workshop.

Keywords: Workshop, Transition, Ecological Redirection, Museum, Design

Introduction

Transition Design is critical for successful society-wide environmental and climate change transitions. As (Irwin et al. 2022) observe,

> Transition Design acknowledges that we are living in 'transitional times' and takes as a central premise the need for societal transitions to more sustainable futures. It argues that design has a key role to play in these transitions and applies an understanding of the interconnectedness of social, economic, political and natural systems to address problems at all levels of spatio-temporal scale in ways that improve quality of life.

Ecological redirection is a transitional design practice concerned with the shift of organisations away from anthropocentric modes of existence (Bonnet, Landivar, and Monnin 2021). It offers analytical possibilities for organizational transition.[1] Participatory workshops are key tools for ecological redirection, facilitating individual life transformations through community-led initiatives. However, there is a gap when it comes to transition workshops relating to ecological redirection specifically. Here I examine the design of a "sustainable transition workshop," including the transition/redirection tools developed for and during the workshop. The workshop was delivered in collaboration with Origens Media Lab and the Cité des Sciences et de l'Industrie, Paris, France to understand the ecological concerns and vision of climate activist youth living in the Parisian region. Using the case study methodology of (Picketts et al. 2012), I contribute to existing workshop case study literature and offer insights into transition workshop design to improve their efficacy for practitioners and organisations.

Related Work

In this section, I shall delve into three notions that are at the heart of this article. These include *workshops*, *ecological transitions* and specifically *ecological redirection*.

Workshops

Literature on workshops in the context of climate change often have a tendency to focus on the **results** of said devices. They focus on the

outcome of workshops rather than what their methodology entails or how they might have been built. Picketts et al. offer an interesting example in that context, as they unpick what they learnt about adaptation to Climate Change from a workshop (Picketts et al. 2012).

Participatory Design literature offers some insight into these subjects through the study of participatory or creativity levers (McKilligan, Seifert, and Gonzalez 2010). Cooperation in such contexts may necessitate appropriate mediation (Fougères and Ospina 2010).

This article explores the design of a participatory workshop that makes use of alternative realities in collaborative inquiry process. In that context, Dindler and Iversen's work on fictional inquiry offers some insights on the strength of fictional frames to bring forth participant ideas surrounding the future of museums (Dindler and Iversen 2007).

This case study will aim to offer insights into the design process of a workshop using speculation as a form of fictional enquiry, adding to the existing workshop case study literature.

Transition towards carbon free-futures

Ecological Transitions have, on their side, been thoroughly studied. Transition initiatives concern many disciplines, reflecting the complex nature of this environmental crisis and its often cited climate change aspect.

Such a focus on transition connects with the often cited need for a paradigm shift (Ichioka and Pawlyn 2021; Head 2016). Ideas of transition connect to society-wide shifts, concerning education, energy (Jorgenson, Stephens, and White 2019) or economical transformations (Monnin 2018). Climate change itself presents itself as a transitory state for ecosystems as deep changes in their environment impact the ways one might imagine their future (Grimm et al. 2013). Transition studies, says Caletrío, "is concerned with long-term processes of radical and structural change to sustainable patterns" (Caletrío 2016).

In line with Transition Studies, Irwin et al. propose to explore Transition Design (Irwin et al. 2022) :

> Transition Design acknowledges that we are living in 'transitional times' and takes as a central premise the need for societal transitions to more sustainable futures. It ar-

> gues that design has a key role to play in these transitions and applies an understanding of the interconnectedness of social, economic, political and natural systems to address problems at all levels of spatio-temporal scale in ways that improve quality of life.

Literature also concerns itself with the community-led shifts through the example of the aforementioned transition towns initiative, which seems to offer a way to facilitate individual life transformations through the help of communities. My work concerns a specific transitional practice named **ecological redirection.** This concept has been theorised by Landivar, Monnin and Bonnet in France, and concerns itself with the shift of organisations away from anthropocentric modes of existence (Bonnet, Landivar, and Monnin 2021). Research engaging with that concept focuses on case studies of organisations or phenomena in crisis in the context of the anthropocene such as an exploration of swimming pools (Landivar 2022; Marchand and Bouteyre 2023). Origens Media Lab, the organisation that hosts these researchers, can be asked to perform an analysis of the possibilities for ecological redirection of organisations.

Following practices of ecological transition and transition design, this case study offers insights into the cogs of workshop design, which should be relevant for practitioners and organisations aiming to make use of workshops in their transition journeys.

Though there is an abundance of research using of case studies to explore practices surrounding the environmental crisis, there is still a gap when it comes to transition workshops relating to ecological redirection specifically. This is the research gap I will attempt to cover in this article.

Case Study about the Cité des Sciences et de L'Industrie 2050 Workshop

Case study context

In this section, I will explore the context of the workshop I designed. This workshop was designed surrounding a collaboration between Origens Media Lab whom I was working with and the Cité des Sciences et de l'Industrie. A report was mandated by the latter, asking the lab to investigate its potential ecological redirection. In that con-

text, I created a workshop, aiming to bring forward the voices of climate activist youth living in the region. The workshop serves to collect their vision for 2050 in line with their current ecological preoccupations. This section delves into contextual elements pertaining to the CSI and the participants of the workshop – concerning the CSI, the following section delves further into the methodological framework surrounding its contextual investigation.

The Cité des Sciences et de l'Industrie

The Cité des Sciences et de l'Industrie (CSI) is a Public Institution situated in the 19th arrondissement of Paris, France. It is comprised of a Museum, a Library, and a variety of public services including a Conference center, job services and a collaborative workshop.[2]

In that multifunctional space, I conducted a total of five informal observation days over the months of March and April 2023, aiming to get a sense of the place beyond its numerical values. They were supplemented by informal interviews which were recorded through the use of handwritten notes. This allowed to bring to light the following of many insights about the visitors of the CSI:

Many of these visitors are children younger than 12. Standing around the Main Hall of the CSI, one can observe a flurry of children, with their schools during weekdays or their families on weekends. In one informal interview, a science mediator told me that her space was aimed at older teenagers and adults, yet adults seemed to come only to bring their children. There are specific areas dedicated to children, including the Cité des enfants which is aimed at 7 to 12 year olds and hosted over 700 000 visitors in 2022 (Universcience 2023b). The difficulties to attract youth beyond the age of 12 (teenagers and young adults) as well as the desire to do so fed into the design of the workshop as they were the voices I seeked to collect. It also demanded that I incorporate appropriate activities, which is something I will delve into further in this paper, in the workshop design methods section (see section 3.2.4, Collective collaborative thinking phase).

Different populations visit the museum and the rest of the CSI (demographic use differentiation). If just over 50 000 people visited the library in 2021 (Universcience 2021), this component (the second most important one in the CSI following the museum), welcomes a very different kind of population. According to the

Director, this part of the CSI is mostly attended by the local migrant population as well as students. This demonstrates how multifaceted the CSI is, but also how compartimentalised it is, which fed into the design of workshop tools through the representation of a CSI which's uses are split between different divisions (also see section 3.2.4, Collective collaborative thinking phase).

Workshop Participants: European Climate Activist Youth

The workshop that is examined in the following section was designed to collect the perspective of potential future users of the CSI who are particularly preoccupied with the environmental crisis. I chose to engage, in that context, with climate activists who were part of youth activist groups. Little work can be found surrounding French environmental activism, yet the case of Europe offers interesting insights into that question.

Climate Activism in Europe is often perceived as middle-class, university- educated and privileged. (Cotgrove and Duff 1980; Kriesi 1989; Giugni and Grasso 2015). However, Della Porta and Portos note that reality is more contrasted (Della Porta and Portos 2023). Through work with Fridays for Future (FFF, a group that also exists in France) they note that:

> our empirical results challenge the idea that, in Europe at least, the FFF marches are predominantly populated by 'rich kids'. Rather, despite some cross-national differences, we noted that about half of the surveyed activists self identified as lower/working or lower- middle classes.

In the context of the CSI, it is worth noting that activists might have variable relationships with institutional responses to the environmental crisis.

Della Porta and Portos also delve into that question:

> the social background seems to impact FFF activists' reliance on different strategies, as lower/working class activists are less trustful of companies/markets and individual lifestyle choices to cope with environmental challenges and stop climate change.

Therefore, the CSI workshop design needed to consider activities that would open up for creative suggestions from the climate activist youth regarding possible futures for the Cité de Sciences et de l'Industrie. It was decided to engage in a four-stage co-operative inquiry workshop aiming to bring forth such suggestions from Climate activist youth regarding possible futures in the 2050 horizon for the Cité de Sciences et de l'Industrie.

Workshop Design Methods

In order to open alleyways for the ecological redirection of the CSI, I followed a specific design methodology which will be explored in this section. The design process began with a cartographic investigation of the CSI before moving onto a cosmological exploration. These fed into the development of the role of the researcher-facilitator within the workshop, but also into the organisation of the four-stage workshop which will be discussed in the next section.

Cartographic investigation

In the process of designing this workshop, I began with a thorough mapping of the CSI, aiming to delve into the various parties that existed within the place. I looked into archives concerning the creation of the place, to bring forth a historical perspective of the genealogy of the place. That inquiry included an investigation through two archives that exist within the city of Paris. One of them is the Kandinsky Library (Bibliothèque Kandinsky 2023), which has collections pertaining to museums overall, including old exhibition catalogues and some documents connecting with the birth of the CSI as it is known today. I also investigated the architectural genesis of the CSI including documents that were provided by the state to architects. To do so, I went to the Modern Architecture Archive Center in Paris to consult files relating to the original project, produced by the architect, Adrien Fainsilber, himself (Fainsilber 1986).

This ground work was completed by an online exploration that included a look into the place of the CSI within the urban organisation of the city itself through the use of the Paris 'Plan Local d'Urbanisme' (PLU), what one might call a General Urban Organisation Plan ('Le Diagnostic Territorial Du PLU' 2023).

These various sources allowed for me to build a general overview of the CSI before delving into work directly with participants.

Through the use of cartography, the researcher sheds light over possible expectations they might have for participant's responses. This allows for the researcher to ensure an understanding of their own biases towards the place, opening up possibilities to develop options for the participant to engage with, including perhaps more neutral grounds.

This also allows the researcher to position themselves as detainers of extended knowledge within collaborative frameworks, offering enhanced perspectives on participant's insights.

When it comes to designing experiences aiming to offer situated insights surrounding possible futures in a given place, cartography allows for some unexpected questions to emerge, feeding into the design of such experiences. In that context, the vast scale of the CSI building and the historical intentions behind the design of the institution offered critical insights to bring forward with participants later on. The architectural division of the building fed into the design of a prototype that participants were invited to design from (see section 4, Collective Collaborative Thinking Phase).

Identifying Tensions and Institutional Cosmologies

The cartography was completed by another, more critically-oriented piece of work. Drawing from a pragmatic, object oriented cartography (Rossetto 2019), I built a more interpretative cosmography. This work aimed to identify underlying ideologies and modes of thinking/perceiving that could be interpreted from prior observations. The word 'cosmography' refers to a graphic representation of CSI's cosmologies. The notion of cosmology is used in line with French anthropologist Descola's work (Descola 2015) which uses that word almost interchangeably with the idea of ontologies, referring to societal representations of the world and its origin (Santos 2013). Key findings included a presence of tensions between different philosophies of science and technology and the role of the CSI in wider society.

Co-operative inquiry: A Multifaceted researcher

This cartography and cosmography presented themselves as an important part of preparatory work for the workshop, and served to develop one important aspect of the event, whereby the researcher

and facilitator of the workshop also became a device, not far-removed from it but active within its context.

This methodological point spurs from a theoretical assumption that it is impossible to avoid both bias and impact on the researched piece, and therefore not incongruous to fully acknowledge that reality. This allows for a more humane mode of facilitation in line with what Heron and Reason call 'co-operative inquiry' (Reason, Bradbury, and Heron 2005):

> Co-operative inquiry is a way of working with other people who have similar concerns and interests to yourself, in order to: (1) understand your world, make sense of your life and develop new and creative ways of looking at things; and (2) learn how to act to change things you may want to change and find out how to do things better.'

Effective Design Results

This sections explores results from a workshop design perspective, engaging with ways in which the workshop was shaped. It was divided into four main phases. These phases were supplemented by custom-designed tools that will also be described in this section.

Four Phases

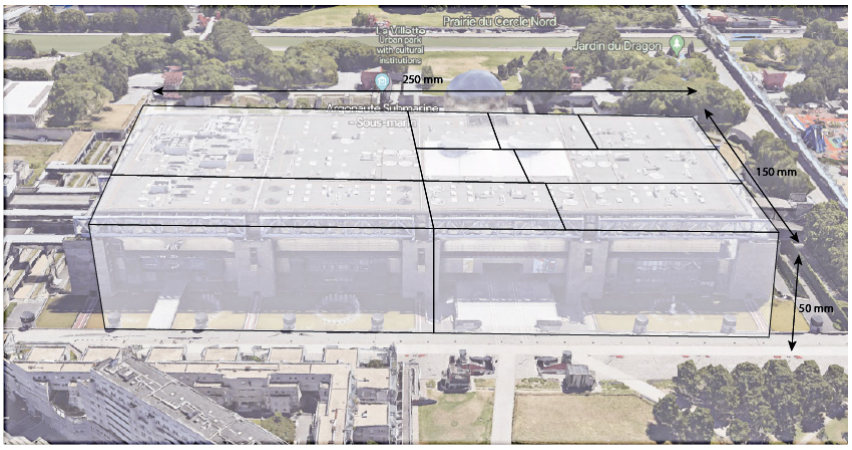
The preliminary work led to the building of a workshop divided in four distinct phases for a two hour session. These included an introductory visit, a individual ideation phase, a collective collaborative thinking phase, and a conclusive feedback phase.

- **Introductory phase**
  The introductory phase begins with the arrival of participants in front of the CSI. This is where the mapping of the place through its pragmatic cartography and its cosmological analysis come into hand. That previously accumulated knowledge presented itself as food for discussions with participants. This is where the facilitator/ researcher presents themselves most as a live device, whose prior investigations allow for a conversational approach to the visit of the place. This is when we collectively decided where in the CSI the rest of the workshop would take place, in this case on a table that was provided for visitors to reflect.

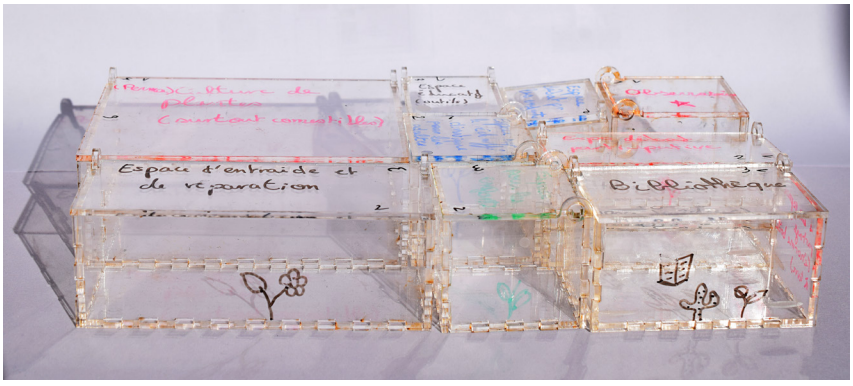
- **Individual ideation phase**
  The second phase requires sitting down and writing/ sketching ideas. Participants were prompted to imagine the CSI in 2050 and speculate on what they hope it might house then. This individual phase aims to facilitate individual participant engagement by allowing them to "digest" prior information through personal reflection. This personal reflection is particularly important as the participants are chosen for their individual qualities - in regards to their belonging to a climate activist community.
- **Collective collaborative thinking phase**
  The third phase draws upon previous phases to paint a collaborative, idealised picture of the CSI. It also presents itself as a somewhat playful practice, which facilitates the engagement of the youthful participants by encouraging creativity and positive emotions (Doyle 2020). This phase is a co-design phase, whereby possible futures are imagined in collaboration, in line with the evolution of design from user-centered to collaborative practices (Sanders and Stappers 2008).

  The introductory visit of the museum and some of the other spaces of the CSI allows for participants to have a sense of the scale of the place. This situated experience was translated through the use of a model representing the CSI at a scale of 1/1000. Participants drew on ideas from the ideation phase to collaboratively discuss the future of the CSI by assigning uses to different sized blocks within the model.

Figure 1:
the CSI participatory model



A : a sketch of the model, overlayed with 3d imagery of the CSI



B : the model, final version as used by participants. The model is composed of an assemblage of different sized transparent acrylic boxes composing a simplified version of the building as an overall cuboid. The variety of sizes allows for participants to prioritise some uses over others. They are also invited to subdivide some blocks if the scale seems too big, or use more than one block if they wish to use more space.

- **Conclusive feedback phase**
  The final phase acts as a conclusion to the workshop. It invites participants to discuss the results, but also the format of the workshop with the facilitator. One important aspect of the phase also includes the way participants have felt during that workshop, to measure the short-term effect of the event on participants.

Conclusion

This case study offers a number of observations. This workshop was designed aiming to build a qualitative dataset of future potential for the Cité des Sciences et de l'Industrie according to young climate activists. With that aim in mind, the following observations surrounding its design process are the main contributions of this article:

Putting subjectivity at the heart of the Workshop

- **The place of the researcher-facilitator**
  In this context, the researcher is also the facilitator of the workshop. Their multiple roles before (mapping out and analysing the CSI) and during the workshop (as a facilitator) feed into its design and the final appearance of the workshop depends on their work prior but also their subjective personality. Embrac-

ing that reality, I have chosen to position myself fully within the workshop design.

- **Engaging dialogue with specifically situated participants in a workshop for transition design research**
  Feeding into the design of the workshop was also the choice of participants. I chose to work with climate activist youth to gather subjective perspectives on possible futures for current infrastructure.
- **A blend of individual and collaborative practices**
  A choice was made to use both individual and collaborative practices separately within the final workshop design. This choice allows for participants to take time between a visit of the place and a collaborative

Situated Design Methods and Tools

- **Investigate to situate**
  In the methods used to design this workshop, a strong importance was given to investigation through a cartographic and cosmographic explorations. These served to better situate the workshop through its various phases.
- **A phase-centered design**
  This workshop was indeed designed using the notion of phases to designate clear divisions within the various activities. These script the activities of the session for better facilitation, but also making sure there is progress between different activities
- **A place-oriented phase: exploration as a protreptic activity**
  In one phase of the workshop, participants are invited to engage with the place through a visit enhanced by the researcher's prior investigation. This exploration allows for participants, in dialogue with the researcher (then acting as a facilitator), to develop a further understanding of the environment they will be speculating about in later phases.

Further Discussion

In this article, we saw how subjective engagement and situated methods can lay grounds for the design of participatory workshops in the context of the ecological redirection of an organisation. If a case study offers valuable contributions through such observations, further research is needed when it comes to the design of ecological

transition workshops overall, through the development of a taxonomy of transition workshops for example.

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Notes

1 Origens Media Lab, for example offers ecological redirection analysis for organisations (Landivar 2022; Marchand and Bouteyre, 2023).

2 One might add that it is - if considered overall a museum - the biggest science museum in Europe. It is 250 m long, 150 m wide and 50 m high, for a total of 1 875 000 m3 (Universcience 2023a). The CSI employs 1051 people while it hosts over a million visitors every year (Universcience 2023b).

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Gigamaps as enabling tools for envisioning futures

Co-design toward systemic transition

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Abstract

Entrepreneurial ecosystems have gained attention for fostering innovation and sustainable transition. However, their complexity poses challenges, especially when different companies co-design for future making toward sustainable transition strategies implementation. Systemic Design (SD) offers potential solutions, employing system mapping tools like Gigamaps, that use visual synthesis to support effectively the participatory processes.

This article aims to present a formalized protocol for the use of Gigamaps as a co-design tool to trigger dialogues among industrial stakeholders, facilitating entrepreneurial ecosystem transition.

Through a case study from the master's degree SD course at Politecnico di Torino, the article will present a Gigamaps-driven co-design experience in an entrepreneurial ecosystem.

Finally, the study limitation and the need for systems-thinking and complex science-based methods to support the implementation of those envisioned scenarios are stated.

Keywords: Systemic Design, Gigamap, envisioning future, co-design

Introduction

In recent years, entrepreneurial ecosystems have gained significant attention to foster innovation, toward sustainable transition. These ecosystems comprise a complex network of actors, including entrepreneurs, investors, universities, government agencies and support organisations, working together to create an environment conducive to green entrepreneurship, considering governance and system components (Hakala et al. 2019).

As the field of entrepreneurship continues to evolve, there is a growing recognition of the importance of both adopting a systemic approach and involving stakeholders in the design and development of entrepreneurial ecosystems toward sustainable transition (Irwin 2018; Jonas et al. 2018). However, understanding and managing the dynamics of these ecosystems can be challenging due to their inherent complexity and interdependencies (Spigel 2017).

To address this challenge, the Systemic Design (SD), as a discipline, focuses on understanding and co-creating complex systems with stakeholders (Jones 2014). Furthermore, a tool like the Gigamaps within SD helps to visualise and analyse these systemic factors and supports the learning, representation, and communication of perspectives, actors, and relationships in complex system challenges (Jones and Bowes 2017). The Gigamaps enable stakeholders to identify opportunities, challenges, and potential pathways for transition (Kibler et al. 2022). However, it is crucial to recognise the limitations and barriers in using Gigamaps as co-design tools. Within SD, there is a lack of formalisation of a protocol for stakeholder engagement and the use of Gigamaps in co-design processes.

This article aims to systematise the practice of using Gigamap as a co-design tool by presenting the results of holistic diagnosis (Battistoni et al. 2019) and implementing and evaluating a protocol for collaborative use in an entrepreneurial ecosystem.

The article proceeds with a review of relevant literature on systemic approaches and stakeholder engagement, in entrepreneurial ecosystem transition, and Gigamaps as SD tools. It then outlines a detailed protocol for Gigamaps-driven co-design sessions for entrepreneurial ecosystems transition. The implementation of this proto-

col within a case study is presented, followed by a discussion and conclusion section in which the protocol and research limitations and future implications for the design discipline are reported.

Systemic approach in entrepreneurial ecosystem transition

Entrepreneurial ecosystems play a crucial role in driving sustainable transitions and fostering entrepreneurship. The existing literature on entrepreneurial ecosystems provides valuable insights into their importance, challenges, and the need to adopt a systemic approach toward this transition. Cohen (2005) examined the entrepreneurial ecosystem literature's applicability to sustainable valleys' development, emphasising the importance of a holistic perspective. Acs et al. (2017) discussed the challenges entrepreneurs face in legitimising their ventures within entrepreneurial ecosystems and the role of ecosystem dynamics in fostering entrepreneurship. O'Shea et al. (2019) emphasised the integration of the entrepreneurial process in empirical research on entrepreneurial ecosystems. Raposo et al. (2021) identified the impact of different actors in entrepreneurial ecosystems on sustainability and highlighted the need to approach entrepreneurship as a systemic phenomenon.

Stakeholder engagement is a crucial aspect of co-designing sustainable transitions within entrepreneurial ecosystems. It aims to actively involve stakeholders, such as entrepreneurs, investors, policymakers, researchers, and community members, in the design process to contribute their knowledge, perspectives and experiences (Gonzalez-Porras et al. 2021). The researcher or facilitator acts as a guide, facilitating discussions and ensuring that all stakeholders have a voice in the process (Micsinszki et al. 2022).

Stakeholder engagement protocols outline the steps and methods for involving stakeholders at different stages of the co-creation process, including co-exploration, co-design, co-experimentation, and co-implementation (DeLosRíos-White et al. 2020). They ensure that diverse perspectives are considered, fostering inclusivity and equity in decision-making (Goodman et al. 2017; Javanparast et al. 2022). Stakeholder engagement protocols also promote transparency, accountability, and trust among stakeholders, enhancing the legitimacy and acceptance of the co-design outcomes (Adams et al. 2015; Köhler et al. 2019).

By incorporating artefacts, actors within a system gain heightened awareness of new possibilities and connections, motivating them to participate in implementing transformative changes and enhancing entrepreneurial endeavours actively. Even if the role of artefacts has been little theorised by entrepreneurial research, the empowering role of design artefacts in foreseeing the reshaping of the narrative of a system has been emphasised both by:

- design research (Norman and Stappers 2015; Romani et al. 2022), as a valuable tool for Research through Design whereby designed artefacts are chief elements in the process of generating and communicating knowledge (Friedman 2008); and
- entrepreneurial ecosystems research (Berglund and Glaser 2022), supporting the theory of learning economy according to which entrepreneurs act on new opportunities that they can foresee and understand (Alvedalen and Boschma 2017).

System mapping: an essential systemic design tool

SD is an interdisciplinary approach that recognises the interconnectedness and interdependencies within a system, addressing complex problems holistically. It integrates knowledge from various fields, such as design thinking, mathematics, computer science, and social sciences, to analyse and tackle complex challenges (Stewart 2011). Within SD, mapping and visualising the complexity of a system have been used to facilitate dialogue and collaboration among stakeholders (Jones and Bowes 2017).

Gigamaps are SD artefacts that capture and represent the complexity and wickedness of problems, utilising visual and textual elements to visualise relationships within a system (Sevaldson 2011). They are employed in co-design sessions to explore and shape the future collaboratively, ensuring contextually relevant, inclusive, and sustainable solutions (Jones and Bowes 2017).

However, the effective use of Gigamaps as a co-design tool encounters limitations and barriers due to their complex structure and layered information density (Sevaldson 2011). One limitation is the need for stakeholders to possess the skills and knowledge to utilise Gigamaps effectively (Sanders and Stappers 2008). This suggests that stakeholders may require training and support to fully leverage the tool's potential.

Additionally, facilitating effective dialogue among diverse stakeholders can be challenging (Guntveit et al. 2020).

To overcome these limitations, a formalised facilitation protocol is essential to achieve a more comprehensive and contextually relevant understanding of the entrepreneurial ecosystem (DeLosRíos-White et al. 2020). Stakeholder engagement protocols provide a structured framework for facilitating meaningful participation and stakeholder collaboration (Goodman et al. 2017).

Over the past 20 years, an SD methodology consisting of five main phases has been developed and implemented at Politecnico di Torino, supporting socio-technical system co-design toward sustainable innovation. Building on Battistoni et al. (2019) and following the theorisation of the Double Diamond framework (Design Council 2005), the actual methodology steps are the follows:

1 Understanding complexity: this consists of system mapping of the current scenario, considering both the surrounding context and the company's flows of energy, matter, and information.
2 Tackling challenges: challenges are represented as much by critical issues as by the potentials (i.e. the aspects of the system not currently valued). In-depth research then allows for the following to identify possible solutions for each challenge, both at current best practices and the scientific literature level.
3 Designing the new system: scenario analysis that leads to the design of new relationships between processes and actors, which optimises information, energy, and material flows toward change.
4 Assessing the system: evaluation and impact assessment of the systemic project according to a timeframe and a scale for the possible consequences, benefits and markers of the change.
5 Implementation: activating the actions that, step by step, designed all the relationships towards the new system stability.

The tangible result of each first four phases of the SD methodology is a Gigamap that respectively consists of the visualisation of: 1) the system under consideration, i.e., the local context (1a) and the company's value chain (1b); 2) its limitations and relationship opportunities toward change; 3) how it could evolve into a new system; and 4) the outcomes and impacts.

However, there is a lack of formalisation of effectively utilising the Gigamap as a co-design tool within the formalised SD methodology. Insights from the references suggest some general considerations:

- Introduce stakeholders to the Gigamap concept, highlighting its value as a visual tool for comprehending complex systems (Kjørstad et al. 2021).
- Clearly outline the co-design session's scope and objectives to ensure stakeholder alignment (Kjørstad et al. 2021).
- Engage stakeholders in collaboratively mapping the system using the Gigamap, visualising its components and relationships (Davidová 2020).
- Analyse the mapped system to identify intervention opportunities and challenges, involving stakeholders in insightful discussions (Davidová 2020).
- Facilitate a co-creation process where stakeholders generate and design interventions based on Gigamap insights (Davidová 2020).
- Continuously refine the Gigamap and interventions through iteration, considering diverse perspectives for contextually relevant and inclusive solutions (Nousala et al. 2018).

It is important to note that while these steps provide a general framework, no specific protocol has been formalised for using Gigamaps to transition the entrepreneurial ecosystem or into other socio-technical systems.

Methodology

The work presented below is Research into Design (Frayling 1993), producing new knowledge about the tools of designing, building on the research activities conducted over the last years by the authors, colleagues, and students at the Politecnico di Torino.

Although this research is based on experience in various industrial innovation processes, just one case is reported here to exemplify and illustrate the lessons learned from implementing an industrial stakeholder engagement protocol in Gigamap-driven co-design sessions.

Data were collected from (1) visualisation results, (2) notes collected on co-design sessions, (3) student databook, and (4) feed-

back from industry stakeholders. The notes, coded during the co-design session, were generated to understand the use of the protocol, especially (1) in facilitating stakeholder dialogue and (2) in facilitating the effective implementation of strategies designed for system transition.

Gigamaps in co-design sessions: a stakeholder engagement protocol

Within SD methodology, the collaborative use of Gigamaps unfolds as follows (Figure 1).

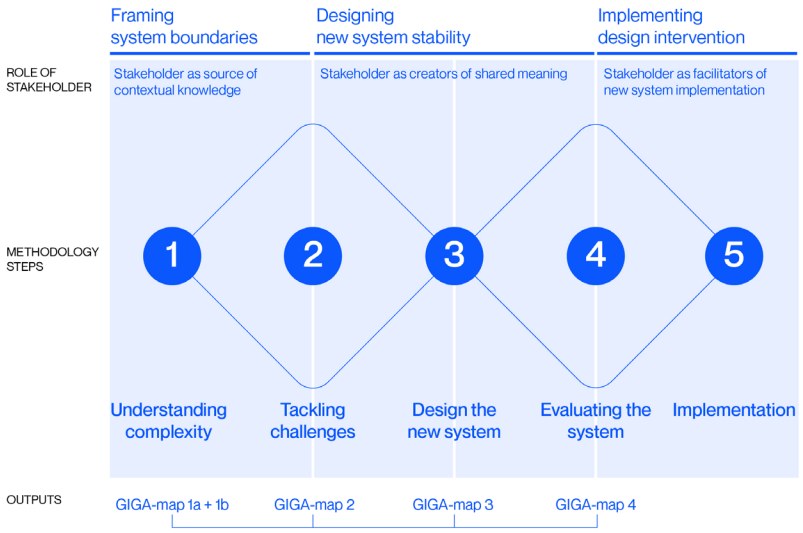


Figure 1 Systemic Design Methodology and Role of Stakeholders at Politecnico di Torino.

The primary goal of the following engagement protocol is to foster dialogue within Gigamap-driven co-design sessions among systemic designers, local entrepreneurs, and other stakeholders, ensuring that their perspectives, knowledge, and insights are integrated into the SD methodology implementation toward system transition.

Based on guidance from existing literature on stakeholder engagement from several research fields, the protocol is designed to define the purpose and objectives of stakeholder engagement clearly; provide the necessary resources and support to stakeholders (Boaz et al. 2018); promote a collaborative and inclusive environ-

ment (Dawkins 2015); incorporate stakeholder input into decision-making (Ray and Miller 2017); evaluate and report on stakeholder engagement (Petkovic et al. 2020).

Step 1: Understanding Complexity

1 Stakeholders' role: share contextual knowledge.
2 Activities:
   a Conduct desk research to gather information on the local entrepreneurial ecosystem, regional context, and the local community.
   b Conduct a field visit to the company under study and the local region.
   c Arrange interviews with company representatives, to gather insights on the local context and company value chain.
   d Create Gigamaps 1a and 1b.

Step 2: Tackling Challenges

1 Stakeholders' role: collaborate in the identification of critical issues and potentials.
2 Activities:
   a Organize a one-hour online or in-person session with the company representatives to:
      i Deepen and discuss Gigamaps 1a and 1b.
      ii Identify and discuss the challenges of the company, the local entrepreneurial ecosystem, the regional context, and the local community.
   b Conduct desk research to explore opportunities for systems transition, the company's role and the design intervention's boundaries.
   c Create Gigamap 2.
   d Organize a 30-minute online or in-person session with company representatives to:
      i Deepen and discuss the causal relationships highlighted in Gigamap 2 between the identified challenges from Gigamaps 1a, 1b and the opportunities.
      ii Discuss the boundaries for design intervention and the feasibility of the opportunities.

Step 3: Designing the New System

1 Stakeholders' role: creator of shared meaning.
2 Activities:
   a Conduct desk research and scenario analysis to envision how the selected transition opportunities can be implemented through short-, medium-, and long-term intervention strategies.
   b Create Gigamap 3.
   c Organize a one-hour online or in-person session with company representatives to:
      i Deepen and discuss Gigamap 3, facilitating sensemaking activity with stakeholders where they actively analyse potential changes in the relevant system.
      ii Encourage stakeholders to contribute to designing new strategies designing new relationships between the value chain, the regional context, and the local community.

Step 4: Assessing the System

1 Stakeholder role: partner in impact assessment.
2 Activities:
   a Conduct desk research to predict the potential impact of defined strategies.
   b Create Gigamap 4.
   c Organize 30-minute online or in-person session with company representatives to:
      i Envision the potential impacts of proposed intervention strategies on various aspects of the system, including environmental and socio-cultural sustainability, product quality, and production efficiency.
      ii Define a timeframe and the scale for implementing and assessing the consequences of the intervention strategies.
      iii Compare Gigamaps 1a and 1b with 4 to acknowledge stakeholders' role in system transition.
      iv Solicit feedback on the effectiveness and impact of stakeholder engagement activities in the implementation and monitoring.

Step 5: Implementation

1 Stakeholder Role: actively participate in system transition.

2 Activities:
   a Maintain an open dialogue with stakeholders during the implementation phase to address challenges and refine the system.

Case study: protocol implementation

The case concerns the research carried out in 2021 by a team of six master's degree Systemic Design "Aurelio Peccei" course students at Politecnico di Torino in partnership with Caseificio Pier Luigi Rosso, a renowned dairy industry located in Pollone (Biella, Piedmont, Italy). Caseificio Rosso is a family-owned business with over 120 years of experience, producing and trading typical Biella province cheeses. Under Pier Luigi Rosso's and his sons' leadership, the company has thrived, maintaining its strong ties to tradition while embracing innovation. The company has expanded its activities by actively participating in local associations and consortiums and international trade fairs, contributing to the region's economic development.

Implementation of the protocol involved engaging the current owners of the dairy, Enrico and Riccardo Rosso, as stakeholders. Adapted to the course schedule, the first four steps of SD methodology and protocol implementation took 5 months.

After being introduced to the SD methodology, students conduct a field visit to the diary in Pollone and the surrounding area. Subsequent sessions were scheduled online due to both the physical distance between the university and company locations and the COVID-19 pandemic restrictions, which did not allow students to travel easily. Gigamaps were developed by students using Miro software as a free collaborative online visual tool, and Adobe Illustrator.

Finally, company representatives were invited to participate in the project's final presentation during the final exam session held in Turin. There, they were asked to report on the engagement process and the results of the SD through a short interview.

Results

While Gigamap-driven co-design sessions often prioritise flexibility and creativity, introducing a protocol helped streamline and structure the process, leading to more efficient and effective stakeholder engagement. A protocol proved a promising enabling tool

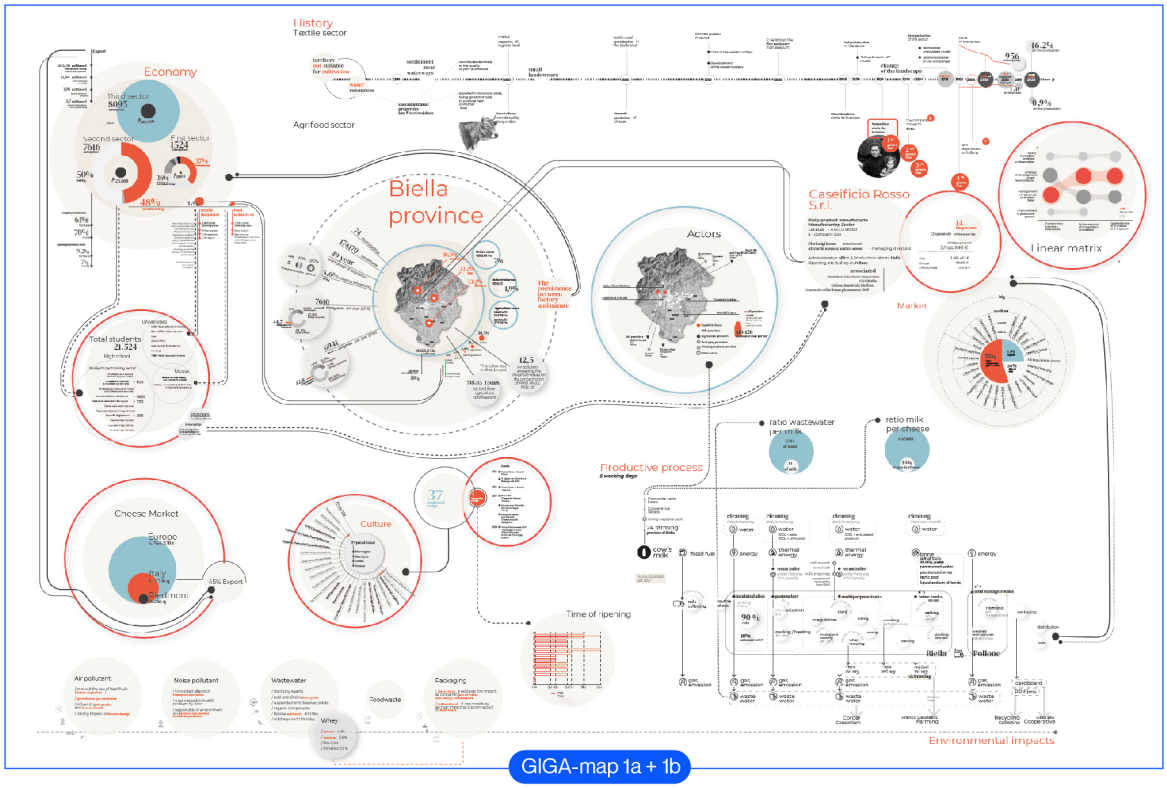
for implementing the designed strategies. The implementation of one of the designed interventions took place beyond the duration of the course, following the involvement of other local stakeholders.

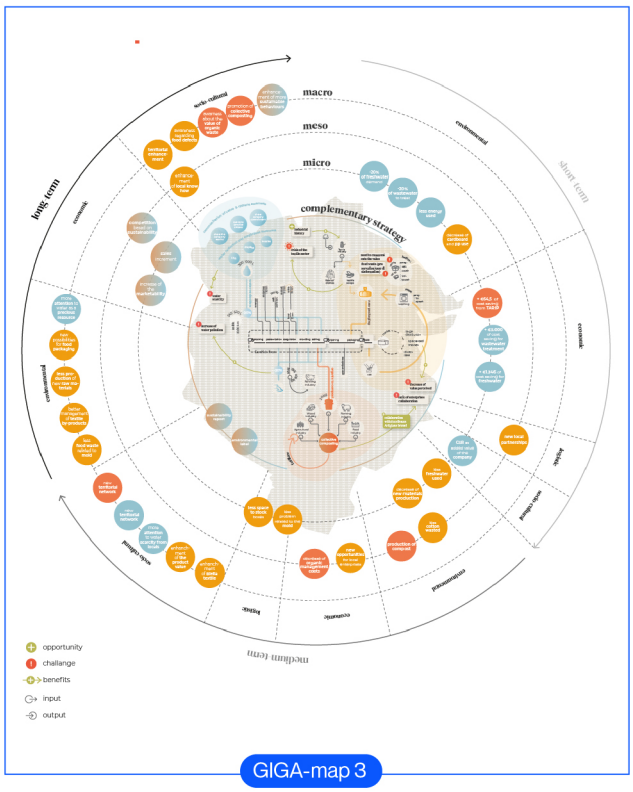
This case study identifies three main lessons from implementing a protocol for Gigamap-driven co-design sessions.

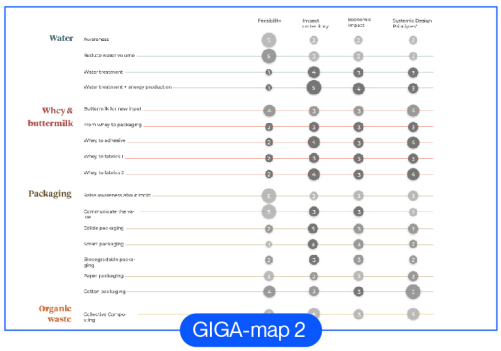
1 Clearer roles and responsibilities. According to this protocol, the role of stakeholders iteratively evolves from being a source of contextual knowledge (in steps 1 and 2) to becoming creators of shared meaning (in a sensemaking activity, step 3), until they become facilitators of the implementation of the new system (step 5). This can reduce confusion and conflicts, allowing participants to better understand their contributions and how they fit into the more extensive envisioning process.
2 Improved focus, commitment, and time efficiency. The use of a protocol helps participants better understand the purpose and goals of different co-design sessions. It provides a framework to align discussion, resulting in a more efficient management of the time and resources allocated to co-design sessions by facilitators and stakeholders, for whom time is often critical.
3 Student awareness of their role. It is well known that Gigamaps are not artefacts that stakeholders can access independently (Sevaldson 2011); rather, they require the guidance of a systemic designer to guide the co-design process and explore their contents collaboratively. A systematic and progressive student-led stakeholder engagement protocol has led to the establishment of a trust-based relationship between industry stakeholders and students. This has increased student awareness of the importance of their role as designers.

The most significant outcome of these is the heightened commitment of stakeholders to implementing system changes and solutions resulting from the co-design process.

Gigamaps (Figure 2, next page) provided a detailed overview of the relationships and dynamics in which the company operates, fostering collaboration and shared responsibility among stakeholders. The team identified key limitations to system change, including a lack of awareness about the dairy process's impacts and







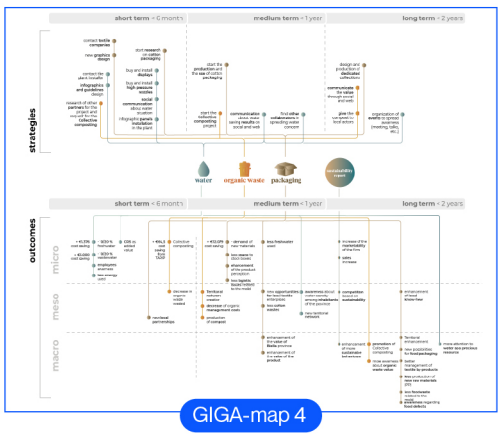


Figure 2 Gigamaps. Credits A. Marchesi, F. D. Moldovan, M. Puglielli, W. Tonelli, M. Troppino, X. Wu.

insufficient communication about product and territory value. Additionally, the high freshwater use in a water-scarce and polluted area and the inefficient use of organic residues posed challenges.

A threefold strategy was devised to address these issues. The first strategy focused on reducing water consumption through high-pressure nozzles and valves, raising employee awareness through data visualization, and enhancing communication through articles and social media. These efforts aimed to save approximately 20% of annual water usage, benefiting the company both economically and in terms of environmental impact.

The second strategy involved establishing a collective composting facility with local stakeholders to manage organic residues.

The third strategy centred on designing a coordinated image for Caseificio Rosso and Pezzata Rossa d'Oropa (Figure 3) to promote the company's commitment to a sustainable Biella dairy sector transition and using textile scraps from local production for breath-

Figure 3 System identity. Credits: A. Marchesi, F. D. Moldovan, M. Puglielli, W. Tonelli, M. Troppino, X. Wu.

able cheese packaging, preserving the quality of cheese, and creating a bridge between Biella's two heritage industries, textiles and dairy, toward industrial symbiosis promoting the valorisation of byproducts and reduction of environmental impact (Neves et al. 2020). Collaborative experiments were conducted with the University of Turin's Department of Agricultural, Forestry, and Food Sciences, Caseificio Rosso and Lanificio Fratelli Piacenza (local woollen mill) which supplied textile scraps.

Discussions and Conclusions

This article contributes to conceptualising (1) the use of Gigamaps as a co-design tool and (2) the evolving role of stakeholders in co-designing entrepreneurial ecosystem transition interventions.

The practice of using Gigamaps as a co-design tool has been formalised, facilitating the replication of successful approaches and results.

Given the empirical evidence reported, it provides methodological input for practitioners, management, and design researchers to inform and co-create collaborative intervention strategies for system transition with industrial stakeholders in an entrepreneurial ecosystem and lay the groundwork for strategy implementation. However, the proposed protocol may have some limitations, as specific protocols may vary depending on the context and objectives of the co-design session.

The role of stakeholders is formally defined in the participatory SD activity based on Gigamaps. Therefore, the regional entrepreneurs' capacities to assess and reveal the challenges and opportunities linked to their ecosystem assets toward sustainable transition and development were developed and strengthened. Consequently, following the theory of learning economy, their engagement toward system implementation through one or more strategies is increased. Finally, by applying this formalised engagement protocol, design students better harnessed the power of Gigamaps to promote meaningful and sustainable co-design processes.

Research is still needed to facilitate the implementation of the envisioned system. Although Gigamaps are valuable tools to create shared narratives for collaborative future-making, implementation rarely occurs. Therefore, it can be argued that more reflection on research is needed from two perspectives:

- lack of stakeholder literacy on Gigamaps;
- lack of systemic implementation management methods based on SD.

To overcome these limitations, it can be argued that it is necessary to enable stakeholders to use the Gigamaps after co-design sessions. In addition, there seems to be an urgent need to develop systems-thinking and complex science-based methods that support the implementation and management of systemic strategies, which could help overcome the implementation bottleneck.

Acknowledgement

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More information about the scope of research in Systemic Design at Politecnico di Torino and the case studies presented can be found on the YouTube channel: https://www.youtube.com/c/SysSystemicDesignLab

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Together-telling as a means to share cultural perspectives in Education for Sustainable Development

A study from Greenland

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Abstract

Education for Sustainable Development (ESD) is considered one of the paths leading towards a sustainable future. However, work in ESD must be responsive to the local context and culture in order to be accepted by the people involved. This article examines how together-telling can be used as a means for collaborative future-making in ESD. By reflecting on cultural differences in nature relationships and manners of communication, together-telling is suggested as an approach to give space to voices other than those dominating the global sustainability narratives. The focus is on a respectful way of bringing together and learning from different perspectives of Western-European and Arctic Indigenous cultures in the context of sustainability. A study from Greenland is used as an example from an Indigenous culture in Northern Europe.

Keywords Education for Sustainable Development, Greenland, Indigenous knowledge, together-telling

Introduction

Education is a precondition for empowering people to contribute to a sustainable future. This was posited in the 'Agenda 21' of the Earth Summit in Rio de Janeiro (UNESCO 1992) and led to the concept of Education for Sustainable Development (ESD). The purpose of ESD is quality education that "provides the values, knowledge, skills and competencies for sustainable living and participation in society and decent work" (UNESCO 2009, 118).

Despite good intentions, the role of ESD is not without criticism. One point is the dominance of Western values in the context of ESD. For example, the competences that ESD communicates are based on the interests of the OECD (Organisation for Economic Co-operation and Development) (Rychen 2008). Since these values have contributed to the present non-sustainable way of living, it is questioned how the same values could support an education that is supposed to pave the way for a sustainable future (Malone, Truong, and Gray 2017). With reference to the "competencies of integrative thinking and practice" (Rieckmann 2018, 38ff), educators are encouraged to reflect on the importance of different perspectives and cultural values in the context of sustainability when working with ESD.

This article explores how perspectives from people of different cultural backgrounds can be shared and integrated in ESD. The focus is on Arctic Indigenous and Western-European perspectives on human-nature relationships and traditions in communication. A case-study in Greenland is used to elaborate and add discussion to this topic.

Modern Greenland is shaped by traditional Inuit culture, the influence of Western-European missionaries, Danish-Norwegian colonialism (Powell 2016, 200-216), and more recently by globalization and digitalization like other countries in the world. The educational system in Greenland mostly follows Danish teaching traditions. Nevertheless, little is found on the implementation of ESD in Greenland, in contrast to numerous studies in other Nordic countries (Jucker and Mathar 2015). Since ESD is concerned with the production of knowledge, along with skills and competences (de Haan 2008, 23-43), the origin of the knowledge going into ESD should be examined critically. In countries that have experienced colonialization, e.g., Greenland, voices of misgivings are heard that education and knowledge can be misused as measures for neo-co-

lonialism (Markussen 2017). The critique is that ideas and actions are imposed without considering Indigenous knowledge. Danielziek (2013) holds the opinion that ESD can contribute to the consolidation of global power relationships. Being aware of the risk of Eurocentrism in ESD, educators should strengthen competences that support the understanding of different perspectives (Schreiber and Siege 2016, 39).

In this article, oral storytelling, is suggested as a means in ESD to embrace Indigenous and Western mindsets with respect and equality, giving space to all voices. Storytelling is a traditional, cultural practice in the history of humankind (Campell and Moyers 2001). In cultures without writing, the principles of behavior and coexistence were passed on by oral storytelling, including expressive performances (Merkel 2015, 45). In modern education, various forms of oral story-based work are being applied. Gersie, Nanson, and Schieffelin (2022, 22) describe this as a continuum between the two main modes of "performance-oriented storytelling" and various forms of "applied storytelling". They all have in common that they take advantage of the effect of stories to support narrative thinking, create emotions, engage people's imagination, give orientation in a complex world, and allow people to share experiences (Harding 2009, 91, 93; Breithaupt 2022). The sharing of personal, authentic stories means that the experiences of one person can become the experiences of others (Breithaupt 2022, 10). This can convey a feeling of connectedness. Similarly, describing values and thoughts by stories allows a more friendly exchange than a direct articulation of opposite points of views. This is suggested to be useful even in sensitive contexts such as peacebuilding (Nanson 2021, 60). Hence, when coming from different cultural backgrounds, the sharing of personal stories can contribute to a better mutual understanding.

Methods

In the present study, two cultural aspects were included: i) nature relationship – because the view on nature is a central aspect in the understanding of sustainability (Choy 2017), and ii) modes of communication – because communication is important when bringing together diverse or even contradictory perspectives. Semi-structured interviews were carried out in Greenland using qualitative reconstructive research (Bohnsack 2010). In addition to this, litera-

ture research and results from a study by Ritter and Larsen (2023) on human-nature relationships, including interviews with Greenlandic Inuit and with Sami people in Northern Norway, were used to gain information on Indigenous views on nature.

Code	Interviewees	Approx. age	Interview Language
A	Greenlandic Inuit, female, doctoral student of social sciences, Nuuk	20-25	Danish
B	Greenlandic Inuit, female, historian, Nuuk	30-35	Danish
C	Greenlandic Inuit, male, master student of archaeology, Nuuk	20-25	English
D	Dane, male, lecturer educational studies, living in Greenland since 2002, Nuuk	40-45	Danish
E	Dane, male, teacher, living in Greenland since 1986, Qaqortoq	60-64	Danish

Tab. 1: Interviewees of the expert interviews, conducted in October 2019.

The semi-structured expert interviews were carried out as guideline-based interviews (Kruse 2014, 166 ff) in October 2019. Key experts were selected as persons from the educational or the cultural-historical sector in Greenland. They were Greenlandic Inuit or Danes who had a long period of work and residence in Greenland (see Table 1), presenting different cultural backgrounds to embrace the diversity of perspectives to be shared in the context of ESD. The analysis of the interviews was carried out using qualitative content analysis by Gläser and Laudel (2009; 2013) supported by the software MIA (www.laudel.info/downloads/mia/).

Results

Nature Relationship

For all interviewed Greenlandic Inuit, the contact with nature has been of great importance since their childhood. It was supported by their parents and family members. They ascribe to it feelings of great freedom and possibilities to learn about local nature. "My parents, my uncles, and aunts, they wanted us to be outside, you know because it's important to be around in nature" (Greenlander C). The adults allowed the children to roam in nature freely. But they also accompanied them to explain what they met in nature.

Greenlander A spoke about dog sled tours with her father. On these tours, she learned to be aware of the forces and dangers of nature. Her father strongly encouraged her always to observe the weather and the landscape closely. "There is simply a big respect for the forces of nature regarding the weather, and where we were. My father has always expected that I observe our route, all the time, to be able to find my way back if the weather would turn. That was kind of a profound respect for our surroundings." (Greenlander A).

A profound knowledge of nature, communicated through generations, pointing to environmental changes being observed more quickly. The people adjust their behavior to avoid dangerous situations. Greenlander C talked about his hometown Upernavik, where families used to go ice-fishing at a certain spot. One year, several people had broken through the ice and died, because the ice had been thin due to warmer winters. Since then, this spot has been avoided by the locals. Ritter and Larsen (2023) met similar statements in their interviews in Greenland that support this respect of the forces of nature. One male Greenlander said: "In my childhood, we lost many family members to nature. They drowned or had accidents in the mountains when hunting. That's just the way it was." The reaction of this man was to be more careful and aware of risks when being out in nature himself.

A close contact with nature and its forces have formed a holistic view on nature in the Inuit culture that differs from the one dominant in Europe. Traditionally, all the world is animate, and a vital force (spirit or soul) exists in all animals, plants, humans and stones, lakes or mountains (Berlo and Philipps 1998, 161). The Greenlander B said in the interview that "nature is dangerous. Nature is something that must be respected. And it is very much animated (inspirited). (…) Nature itself, but also every single animal or thing. Everything is turning into something living." According to her, this view on nature can still be seen among people. It differs compared to other, Western cultures. In Denmark, she says, nature would be personified as a beautiful, young mother, fragile, with long, blond curls and flowers in her hair. In Greenland, however, nature is cantankerous and could kill at any time. There are dangerous forces that must be respected and from which humans must protect themselves. And above all, nature cannot be mechanized. "If nature

doesn't want Greenlandic potatoes to grow, there won't be Greenlandic potatoes. Finished." (Greenlander B).

The opinion of Dane D illustrates the conflict of different cultural perspectives on 'understanding' nature. He states: „Biologists struggle because there is a lack of understanding of what it means to work biologically, scientifically in many places in Greenland. They [local hunters] think that their knowledge is better. Although they can see that the fish are getting smaller and smaller."

Modes of communication

In the Greenlandic culture, oral traditions were crucial for the transfer of knowledge from generation to generation. A written language was first introduced by the missionaries, and then spread quickly. Before that, knowledge, social rules, and taboos were communicated by stories and myths, drum dance and song feasts that can be traced back more than 4.500 years. Missionaries tried to forbid this tradition. Dane E explains that the introduction of television in the last century furthermore influenced this oral communication of knowledge when a hunter, coming home from his trip, no longer talked about his experiences but turned on the TV. "This meant that the stories of where to find the animals and what to be aware of on a hunting trip, they were no longer as present for the next generation as before." (Dane E). Other interviewees pointed out the importance of the oral tradition and expressed their wish to keep it alive:

> "Things were passed on by stories from generation to generation. And knowledge, traditional knowledge, has been passed on by traditional education, by myths, stories, and sagas. I think it is important to keep this tradition alive at school. These are the cultural roots of the society we live in." (Greenlander B)

The influence of traditional storytelling can still be found in modern ghost stories that are told in Greenland today. Originally, the purpose of ghost stories was to communicate a respect of the forces of nature. Today, this is reduced to: Whatever happens - accept it. "Don't mess with it" as Greenlander B said. In a scary situation, one walks away and under no circumstances investigates the cause:

> "[...] You're supposed to respect that, and then you're just supposed to leave it alone. You should -- *don't mess with it.* Whereas in Hollywood or in the European narrative tradition, there is always an explanation. In the end, someone calls a priest or an exorcist or something like that. There is a solution. --- Here [in Greenland] --- you just -- you just shouldn't interfere." (Greenlander B)

Furthermore, the interviews revealed another cultural aspect that should be considered in ESD: the difference between Greenlandic and Danish modes of communication with respect to the culture of discussion. According to Greenlander B, the culture of discussion does not traditionally exist in Greenland: „We don't discuss. End." In the traditional society, it was not possible to live with inconsistencies. "Something like disagreeing with your friends or not being able to agree on one thing or the other puts everything out of balance and creates insecurity in a society." (Greenlander B). Even today, because towns are small and isolated, one cannot get out of the way of others. It is therefore customary to put away disagreements rather than discuss them:

> "You can't just walk to Paamiut [town south of Nuuk] if you don't want to see the people here anymore. [...] You still have to look at them across the freezer in the supermarket during the day, so you have no choice but to get along with the people you don't agree with in some way. Otherwise, you must be really serious in your dispute." (Greenlander B)

Lidegaard (1993), in his book on the Christianization of Greenlandic Inuit, describes this as an experience of the missionaries. When Hans Egede introduced Christianity in Greenland at the beginning of the 18th century and called it „the only truth", he naturally contradicted the views of the Inuit. In doing so, he made a very rude and inconsiderate impression, as it was considered tactless for the Inuit to openly contradict others (Lidegaard 1993, 38). This can remind us of situations between scientists and local people today, as described by Dane D.

Asking for one's opinion is also considered rude in the eyes of Greenlander B. During her studies in Denmark, it was unpleasant for her to be asked by her fellow students about her opinion of a topic:

> "I thought it was -- so uncomfortable. Especially when it got personal, when they wanted to know why you believed in this or why you were advocating that. I couldn't understand it at all. I was like, 'What does it matter to you?' It's totally rude to ask something like that!" (Greenlander B).

According to Greenlander B, it is uncomfortable for a Greenlander to be criticized. A discussion is easily taken personally. „Partly because we're bad at debating, and partly because we're all related. As soon as someone criticizes you or questions your opinion or your suggestion or whatever, it feels like a personal attack". Although she has learned to debate from her experiences in Denmark and now sees the meaning of it, it is still alien to her.

Discussion

The statements of the interviewees reveal differences between views on nature in the Greenlandic and the Western-European culture. The European view on nature has emerged under the influence of the Enlightenment and Romantic eras. According to the ideas of the Enlightenment, the world can be accessed through rationality (rationalism) and knowledge (empiricism). Nature is seen as mechanized, as something that can be calculated and steered (Horkheimer and Adorno 1994, 13). In the Enlightenment, man placed himself above nature; he thought he could even improve nature (Taylor 2017, 62).

This is not the case for the Indigenous perspective in Greenland. Here, nature and its components are considered to possess a spiritual essence, although today less than in the original animism of the Thule culture (moving from Canada to Greenland in the 12th century). In the 18th century, Glann noted about East Greenland: "The Greenlanders believe that all things are souled, and also that the smallest implement possesses its soul. Thus, an arrow, a boot, a shoe sole or a key, a drill, has each for itself a soul" (Glann, in Weyer 1932: 300). The belief in an animated nature was still found in mod-

ern Greenland by Sowa (2014) in a study on indigeneity and ecology in Greenland. Sowa defined four positions of views on nature among Greenlandic Inuit: i) *traditionalistic*, ii) *intermediate*, iii) *emancipatory*, and iv) *hedonistic-collectively*. A person with a *traditionalistic position* believes in natural spirits. This belief can exist parallel to the person's scientific knowledge or way of thinking. This is different to the Western culture where science and logic are said to have caused the loss of a belief in an animated nature.

The Greenlandic relationship to nature, as indicated in the interviews, is not about control or determination, but rather about the acceptance of nature's limits and forces. Nature can be lethal. However, this risk is not dramatized. A similar attitude was expressed by Indigenous Sami people interviewed by Ritter and Larsen (2023). People have learned to accept that nature can be tough:

> "There are not given any explanations for the killing forces of nature. It's just that 'that's how it is'. There are storms. And it is actually the case that someone drowns under the ice. These are dramatic things that are happening. But it is something that is accepted. We cannot do anything about it, we have to accept it. (…) It's like an acceptance that nature is tough. It's not just beauty". (Sami educator and researcher, in Ritter and Larsen 2023, 66)

People try to minimize the risk by avoiding certain situations, by an increased attention, or by having the right equipment when being in nature. In the Western culture, nature's limits are constantly pushed. Knowledge and planning mechanisms are used to cope with nature's forces, and technology like Geo-engineering is considered as a means to improve or amend nature. It is not human beings that adjust to the rules of nature, but nature is adjusted to human needs.

There can be value in bringing together and learning from both approaches, e.g., accepting limits where necessary but understanding causes for a change in natural processes and adjusting to them where possible. This can be fruitful for coping with the challenges to be met in the face of environmental changes (Weizsäcker and Wijkman 2019, 181ff). Western insights have started the sustainability debate, but a dialogue about Indigenous values can make an important contribution to global rethinking (Rychen and Salganik

2003). A Sami doctoral student and nature guide, interviewed by Ritter and Larsen (2023), described how she communicates this to her students:

> "When you meet people from other cultures, you have to remember that the Western mindset is not the only correct one. There are many more ways to see nature and be in it. And it's not always about overcoming nature: 'You have to go up a mountain and conquer it. You have to be stronger than the mountains.' Some traditional cultures say you shouldn't go up the mountain because it's dangerous. We Sami understand that nature has forces, dangerous forces. So, it's like two different ways of looking at nature". (Sami doctoral student and nature guide, in Ritter and Larsen, 2023, 65).

Together-telling

Given the fact that debating is not common culture in Greenland, together-telling is suggested as a better way of communication in ESD to promote a mutual understanding of Indigenous and Western perspectives. Together-telling, as introduced by Larsen, Boje, and Bruun (2021) as part of the True Storytelling method, is inspired by Indigenous peoples' storytelling traditions. It is about sharing different sides of living stories within a group, together with a joint reflection on the values associated with them (Rosile, Boje, and Claw 2018, 310; Larsen, Boje, and Bruun 2021, xx). The approach also focuses on the material importance of storytelling, e.g., the interplay of material conditions, practices, places, and meanings (Rosile, Boje, and Claw 2018, 316). This makes it well-applicable to questions related to nature.

Together-telling works with personal, authentic stories. Authentic stories can create associations with situations the listener can identify with; others show new possibilities or can give inspiration (Breithaupt 2022, 18). The stories shared are not meant to follow a static beginning-middle-end. They follow a dynamic process by weaving stories together, building "living webs of multiple stories" (Rosile et al. 2021, 381). This leads to a new story not based on the values of one dominating perspective but created through the intertwining narratives of the group. It helps to find a common ground.

No criticism or advice is given to the speaker. Rather, the listeners react to one story with another story. The approach avoids the dualism of one-many, in favor of the concept of "multiplicity" (Deleuze and Guattari, 1987). It gives an alternative to hierarchical thinking and interacting. This can help to articulate opposing perspectives more easily in a group, e.g., traditional and scientific knowledge. Instead of incomprehension and critique, insight is given into the other group's perspectives. Hence, when Western perspectives are met with skepticism by Greenlandic Inuit, the stories of the Indigenous people can help explain their doubts. Similarly, Western educators can react with their stories, without taking a dominant position.

Furthermore, using storytelling in ESD supports the oral tradition in Greenland. The Greenlandic interviewees expressed their interest in preserving the oral tradition, but not at the expense of education and modern knowledge. In conjunction with ESD, new stories from contemporary life could be used to address current issues of sustainable development.

Conclusion

ESD should enhance transformative thinking, thereby supporting sustainable development. Transformative thinking presupposes that different perspectives are known and connected. For educators in ESD, it also means being aware of the dominance of Western values in the educational concept and the concept of sustainability. This study suggests together-telling as a means in ESD for bringing together Arctic Indigenous and Western-European perspectives in an equal and respectful manner. Some of the findings are specific to Greenlandic conditions; others are universally valid for diverse cultural and socio-cultural groups.

By using together-telling in ESD, different views of nature can be shared, avoiding hierarchal thinking. The strength of this approach is to give space to different voices. At the same time, it moves away from the Western way of debating personal opinions which is not rooted in the Greenlandic culture. By doing this, ESD stimulates a learning group to consider multiple approaches to sustainable challenges. Applied like this, storytelling can become a useful instrument in the toolbox of ESD, strengthening the process of learning from each other. This takes time and might not be

achieved within one ESD session. But once this basis has been created, different perspectives can be brought together and lead to insight and understanding.

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Fanfiction as a carrier bag methodology of fiction

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Abstract

This paper provides a short introduction to fanfiction as an example of Le Guin's *Carrier Bag Theory of Fiction.* Through the analysis of the fanfiction drabble, this paper gives an initial outline of a methodology for the carrier bag theory, showing how the process of writing is supported by the community that surrounds fanfiction. As such, the writing and publishing of fanfiction can be seen as exemplary of a democratic, bottom-up method for creating the other stories, or life stories, in Le Guin's and Haraway's sense.

***Keywords*:** fanfiction methodology; carrier bag theory of fiction; fandom writing events; drabble; fandom community

The carrier bag theory of fiction – an introduction

> "The trouble is, we've all let ourselves become part of the killer story, and so we may get finished along with it. Hence it is with a certain feeling of urgency that I seek the nature, subject, words of the other story, the untold one, the life story."
>
> (Le Guin 2019, p. 33)

This article takes its starting point in Ursula K. Le Guin's brief essay titled *The Carrier Bag Theory of Fiction*, originally published in *Women of Vision* in 1988 (Le Guin 2019) as well as Donna Haraway's *Staying with the Trouble* (2016). Le Guin and Haraway point towards the need for a new way of storytelling. Instead of focusing on the hero, a story should be seen as a carrier bag, a container, which envelops all the people and artefacts of the story to be told. The bag itself becomes the story, carrying along what we as writers and readers, as human beings, put into it. Le Guin compares this form of storytelling with the collecting of oats. Instead of collecting a few you can keep in your hands, you need a bag or other kind of container to collect as many as possible to transport and store them. In the same way, fanfiction can be seen as an example of collecting stories within a container, a fandom, an archive in which to keep them and make them public for other fans, readers, and writers.

We propose an initial sketch for the methodology of the carrier bag theory of fiction, constructed on the writing and archiving of fanfiction in the sense of fanfiction as exemplary of Le Guin's 'the other story'. Fanfiction is one element in the "community-centered creation of artistic fannish expressions (…) all done electronically among a group of people, mostly women, intimately involved in the creation and consumption of fannish goods." (Busse and Hellekson 2006, p. 6). Fandom and fanfiction has its fulcrum in popular culture, which according to Hermes (2005, p. 137) often is "(…) placed outside the realm of value and quality", suggesting that popular culture is deemed less worthy, even threatening, by academia. Hills discusses the divide and dislike between fans and academia in *Fan Cultures* (2005, p. 13-15), agreeing with Hermes' notion of the Othering of fans. Moving the view on fanfiction and fandom from a top-down approach back into a finder, created by

women to explore works created within the fannish domain, may give insights into both fandom narratives and practices. These practices, we argue, cannot be separated from the narratives, but are necessary parts of what substitutes a life story.

During the research of this paper, it became evident through our literature review that very few scholars have discussed fandom challenges and events within fandom and its narratives, some of the few being present authors (Jensen and Westberg 2016; Jensen 2018). While Booth (2015) and Nybro Petersen (2022) describe fan play, their focus is on the negotiation of understanding the original media, transforming and adapting it into fandom, rather than on the actual practice of writing events as we present them in this paper. The importance of fandom's life stories has, thus, far too long been overlooked, fanfiction deemed as works that, at best, are enjoyable derivatives.

Our main aim with this paper is to draft an initial methodology of the carrier bag of fiction based on fanfiction and fandom community practices.

We take our clues from fanfiction communities and the fan-developed and -maintained platform of AO3. Coppa's definition of fanfiction is based on fanfiction as opposed to mainstream published fiction. Fanfiction is a transformation and rewriting of original, published stories, or popular culture events. Fanfiction becomes Le Guin's recipient, a container in which to put the beloved characters. Fanfiction rarely follows the schematics of the hero's journey (Vogler 2007) as it is a life story, focussing on relationships.

Why fanfiction? Because this is where we tell the other stories. The small ones, the everyday ones, but also stories of love, life, forgiveness, betrayal – stories of enemies to lovers, stories of hot sex, stories that explore gender and sexuality, consent, relationships; stories that explore the art of tea making to show a relationship based on trust and unconditional love; tales that are told for—and because of—the community of people around the stories. These are the stories that in themselves show the need for a supportive community because 'the other stories' are not written in a vacuum. They are told by the people who live these stories every day—people who have those dreams and desires, wishes, and needs.

The scope for a methodology of the carrier bag theory on fiction: The fandom bag

> "If you haven't got something to put in, food will escape you – even something as uncombative and unresourceful as an oat."
>
> (Le Guin 2019, p. 28)

There are several containers in use when creating fanfiction:

- The original stories, which in them carry the seeds for new and different fictions.
- Fandom, the fannish community which supports and creates the different bags for different kind of fictions.
- The archives, which contain the works in progress and finished fictions, including the feedback from readers in the form of comments, likes, bookmarks, and new derived fictions or artworks.

The first bag is, thus, the original fiction or media event. In it, we find the characters that will become our protagonists. The bag itself will also find its use in creating the fandom which will be weaving this new bag, a much larger bag, around the original bag. This second bag contains explanations of the original story, meta discussions, artwork, and other pieces and trinkets that all explain, enlarge, and decipher the original story's characters' relationships, development, their life, and background. Some pieces will become fanon: facts or characteristics not found in the original, but solely created, explained, and widely agreed upon within the fandom itself (Busse and Hellekson 2006). It is in the larger fandom bag that fanfiction will be written and stored. Maybe, some fanfictions will weave their own bags within the fandom bag. Certain genres, tropes, and pairings might develop their own particular kind of fandom, all within the larger fandom bag. In the fandom bag will be fandom events, which enlarge and deepen the relationship between the participants—the fans—within the fandom.

The fandom bag's purpose is to develop and maintain a community in which the creation of fanworks in the form of art, music, gifs, fanvids, and fanfiction is possible and supported. For this to happen, a platform—or rather several platforms—are needed, becom-

ing new containers for the fandom bag to thrive within. Platforms like Tumblr enable fans to find other fans, and to connect and share their work. Discord and Slack facilitate a closer connection between members of a fandom. Here, smaller groups can organise and participate in online events, mentor each other, and become committed to the community at large. Archives like AO3 (archiveofourown.org) and FFnet (fanfiction.net) offer a space for authors to publish their fanfictions. These archives collect and categorise fanfictions, making it easy for new fans to find stories, and for older fans to reread them. AO3 is special in the sense that fans themselves develop and maintain the platform, widening the fandom bag even further by collecting and conserving old archives, and by publishing the *Journal of Transformative Works and Culture*, which is an academic outlet for papers on fandom and fanworks. The *Organization for Transformative Works* (OTW) is the non-profit organisation "established by fans to serve the interests of fans by providing access to and preserving the history of fanworks and fan culture in its myriad forms." (OTW 2023). Because it matters, who develops and maintains the platform which holds the fandom bags.

Le Guin's idea of a carrier bag theory of fiction misses out on the importance of the community, which is needed to develop fiction. The community is present in her narration, but we would like to stress the significance of the community surrounding the storyteller since this community becomes the recipient and the co-builder of a new container for their storytelling. In Haraway's introduction to Le Guin's essay about the carrier bag, Haraway stresses the importance of the communities which enable the creation of carrier bags of all kinds. She tells her own story about three carrier bags, received from three different women, each representing the culture and history of their people (Haraway 2020). These carrier bags tell their own stories in the form they are woven, the colours and patterns used. But they also store artefacts and are stories in and through themselves. Likewise, fandom and storytelling cannot exist in a void; it needs other humans to receive and react upon the stories told.

Some methods within the fandom bag

Fanfiction writœing is supported and encouraged through fandom events. Fandom events play a significant role in content develop-

ment of stories for the fandom bag (Jensen 2018). Such events are organized within a fandom by the fans themselves. Using different online platforms, the organizers create a place for writers and other creators to develop ideas and partnerships for the writing of fanfiction. Different constraints, prompts, and timelines are used to further the writing and engage other fans in reading and commenting.

One of the main constraints in these types of events is the length of the story, typically 100 to 300 words, which must be counted and amount to exactly the specified amount to be liable for entering the writing event. As a rule, prompts will be the type of Le Guin's life stories. Examples of these are the main characters drink tea; one is a barista, the other the customer; fake date for a party; first meeting, etc. Small oats, collected in the fandom bag, some surprisingly new, others written and read a hundred times before, but still liked and commented upon. While the stories are finished within in the word limits, they are part of the bigger story told in fandom. Any fan can change and develop existing stories, creating their own bag within the larger bag.

The fanfiction archive is another bag inside the fandom bag. Fanfictions can be shared on other platforms and be copied into the archive from other platforms or archives. AO3 can be seen as a bazaar, which is open for anyone to participate, using different kinds of media, as well as linking out of the archive; FFnet is the cathedral, in which fanfictions are archived without the possibility to link to external sources or include other media than texts (Raymond 1999). Seen from a methodological viewpoint, as an archive, AO3 supports the theory of the carrier bag, making it possible to collect trinkets around the internet and archive them in one place, easy to find and retrieve because of tags, bookmarks, and subscriptions. AO3 is owned by the fanfiction community itself: any interested member of AO3 can run for the board, just as anyone may volunteer for participation of development and maintenance of the platform itself. Rules and regulations must be approved before implementation, ensuring a transparent use of the platform.

Techniques from the fandom bag

Writing can be a solitary pastime, frustrating at times. Again, the community of fans has techniques to help the content creator. Some are:

- Writing sprints—timed 'write-as-many-words-as-you-are-able'-events—can be organised on Discord or Slack to motivate the writers.
- Anonymous prompts on a platform like Dreamwidth, which are answered in the comments by other anonymous participants, until someone collects the comments and writes the story.
- Gifs on Tumblr seen as prompts for writers to develop into full-blown stories.
- Developing limitations and constraints for a story.

Other constraints can be found in pairings; the intimate relationship between two (or more) characters. The characters from the media event which is the origin of the fandom are eligible for all kinds of pairings: the main villain with the hero; the sidekick with the female lead; the supporting character, only seen for seconds on screen, with the hero, or simply characters mentioned in a passing that set the author free to develop their characters within the canon setting.

Bingo card for the Legend of Zelda Bingo (Ximeria, 2021, by permission)

Genre and tropes are other limitations or possibilities to motivate the writer to write. A common tool is bingo cards, containing several prompts, often tropes or a word that serve as a starting point for a story about a certain pairing or character. One such example can be seen below: here, the word 'snow' may lead to stories about the characters being snowed in, or it can be read metaphorically and lead to stories about the characters being in a relationship that has cooled off.

Roleplaying in online spaces like Tumblr may help finding ideas or co-writers. Writing from one point of view and having a co-writer writing from the other point of view gives inspiration, but also the needed commitment to writing. A beta-reader can help with grammar, plot, and characteristics (Karpovich 2006). Much of these tech-

niques cement the idea of a carrier bag, consisting of the people surrounding the writer.

These bags within bags still contain the fandom bag, but the contents spill over into other carrier bags. Fandom friends become real-life friends, lovers, spouses. A fanfiction writer becomes a published mainstream author; however, they will return to their fandom base to enjoy the unconstrained life of a fanfiction writer.

An example: the tiniest handbag—the fanfiction drabble as container of condensed stories

> "The fitting shape of a story is a sack, a hollowed-out container to hold things that bear meanings and enable relationships, each mochila is a bag for the gripping tales and strange realism, the serious fiction, the science fiction, the SF required for inhabiting the worlds of stars"
>
> (Le Guin 2019, p.11).

While fanfiction takes many shapes and sizes, one particular genre of fanfiction places itself firmly in the group of fiction that is the most condensed, minimalist story there is, while still being big enough to carry with it the immense addition of community and cooperation: the drabble. Following in the vein of community-created writing challenges such as the renga—a collection of interconnected haiku—and the Icelandic kenning, the drabble adheres to a strict word count of a hundred words that, within the word limit, must contain a full story. Coined by an unlikely source, Monty Python, in *Monty Python's Big Red Book*, 1971, a drabble was meant to be a "word game for 2 to 4 players. The four players sit from left to right and the first person to write a novel wins." (Langford n.d.). As Derecho (2006) argues, even the smallest story can and may take a greater significance than the canon material it was based on.

Thus, a drabble, within the fandom space, should contain a story that, elaborated upon, could be a full scene, a short story, or even a novel. It should be noted that the term *drabble* in fandom has suffered vocabulary drift, in time the very strict definition of the drabble as a hundred-word finite story has mellowed in some parts of fandom, in places denoting a short fanfiction, usually below 1,000 words. However, the drabble at its best showcases the condensed

story; a tiny handbag in which the author and reader share a story that is the essence of a much meatier narrative.

Wild Thing (Draco Malfoy/Charlie Weasley)

> 'I am not comfortable with this... arrangement,' Draco huffed. How anybody could live like this, in a building that resembled a shack more than anything else was beyond him.
>
> 'You can put your things in the box over there.' Charlie Weasley looked at Draco's suitcases. 'You won't need all that.'
>
> Outside the rickety building, dragons roared.
>
> 'Perhaps a year in Azkaban had been better than—' Draco waved a hand.
>
> 'Whatever floats your boat. I'll have a shower,' Charlie said and pulled off his shirt. 'Welcome to the wilderness.'
>
> Then again, Draco reconsidered, staring, there were perhaps redeeming features.
>
> (Story reproduced with permission from the author.)

Though drabbles are written and posted by single authors independently, they shine in particular in community-driven drabble challenges or in collections revolving a certain character or pairing; unsurprisingly, seeing that they exist because someone thought to invent them as a story written within a community setting. Particularly in the height of LiveJournal's time as fandom hub, character- or pairing-driven drabble-writing communities like Snape100 or Snupin100 (Snupin being the pairing of Severus Snape and Remus Lupin) had a large following. While fandom cannot claim the glory for inventing the genre, there are quite a few methods of collaborative drabble writing that emerged from within fandom's walls, among others:

Drabble Wednesday (or any day chosen for it). A regular weekly writing exercise. Each author writes a strict hundred-words

drabble in twenty minutes, then posts and shares it with the other participants for open praise and critique.
Last drabble writer standing: drabbles are written by the participants and shared. Each day, readers vote for the best, and the author with the least votes leaves the challenge. This is repeated until a winner has been found.
Event-based drabble challenges: single events where drabbles adhere to a particular topic, for instance New Years Eve for festive drabbles, or Talk Like a Pirate Day for your shivered timbers.

While the constraints may be challenging, the drabble's low word count is a gift to the budding writer or the writer exploring a new pairing for the first time: writing a drabble is a challenge that is not hard to overcome, while it in its demanding form introduces the new fandom author to fandom's particular rules and regulations. The drabble democratises writing, and for that matter also to reading: not all fans have English as their first language and Western fandom is predominantly in English. A short text is a great starting point. While there are genres galore in fandom, drabbles just being an example, the tiny drabble handbag is a bit like Hermione Granger's handbag in Harry Potter: it contains everything you would need for your travels into fandom.

In conclusion: the fandom bag is wide open

> "It matters what stories we tell to tell other stories with; it matters what concepts we think to think other concepts with. It matters wherehow ouroboros swallows its tale, again."
>
> (Haraway 2019, p. 10)

Fandom travels, however, are not the heroes' journeys. Fans travel to find the stories that are not told, not published, not read, because they are about the Other. They are about the heroes that are no heroes, or about the heroes when they are being anything other than heroic. About the people who never meant to be heroes, or about the villains or the vilified. More importantly, fandom travels to tell the stories about characters that normative society at times sees as

villains: queer people, people of colour, minorities whose stories are rarely, if ever, told because they are not marketable. Fandom becomes the carrier bag of the Other, a place that makes it easy to find people and stories that mainstream media rarely tell or recognise if not for shock value; for a token minority; or for the struggle of being a person belonging to a minority group.

Le Guin's vision of the untold life story might have come to life through fanfiction stories. These stories are told because fans need to tell them: ideally, as a gift to themselves and the community. The stories of relationships, of friendships, told in apparently boring, everyday life settings; stories of tea- and lovemaking set on alien spaceships, but almost always with the spotlight on the relationship, the need for another person in your life.

The writing methods, as explained through the Drabble challenge above, focus on creation and maintaining the surrounding fandom community. The process of writing becomes a carrier bag of its own, carrying with it community-building, content-creating, support for writers and artists, as well as the option for creating new friendships and maintaining old.

Lastly, the fandom carrier bag is not limited to Western fandom. In Japan, fujoshi (a self-applied derogatory and debated term for 'rotten woman', female fans) carry their stories within a carrier bag of moe talk (moe banashi) — sessions, during which they discuss and share affective reactions to their favourite characters (Galbraith 2015). Yaoi, a subgenre of BL—Boys Love, homoerotic manga and novels, somewhat similar to slash fan fiction, tells stories that even in the genre's name announce that they do not necessarily make sense: Yaoi is an abbreviation for 'no climax, no punchline, no meaning'. In that, they mirror the short, and at a glance meaningless, life stories told in Western fandom. They carry meaning within the context of a carrier bag just as yaoi carries meaning in particular when it is shared with other fujoshi.

Similarly, the fanfiction as a life story loses any fandom life when it is taken outside the context of the carrier bag. This is a discussion for a later paper, but such a situation occurs for instance when a teacher asks students to write or read fan fiction, or when a fanfiction has its registration number filed off and is turned into a consumer product outside the fandom realm. This only underlines that

fandom, fandom events, and the fandom narrative—be it any fandom text—cannot be separated from its carrier bag without losing or changing its original purpose.

Fandom realm is the carrier bag of all things fannish.

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