Worldbuilding a collective green future with speculative co-design

by Simone Cibrario Nona, with the collaboration of Alberto Longo

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Abstract

This paper showcases the application of the service design methodology Storytelling Group (Kankainen et al. 2012), reshaped to fit the field of speculative design, with particular consideration for the work written on the subject of speculation and games by Coulton, Burnett and Gradinar[1]. The methodology has been used to explore the ecological utopia, or critical dystopia (Schulzke, 2014), of Solarpunk. The result is a lengthy co-design process that incorporates procedural rhetorics (Bogost, 2007) not only in the eventual game design itself, but in the speculative design process. To verify the applicability of the results, the world building elements emerged in the process have been iterated and eventually visualized with the help of comic artist Alberto Longo.

Introduction

According to the Solarpunk Manifesto (ReDes, n.d.):

"Solarpunk is a movement in speculative fiction, art, fashion, and activism that seeks to answer and embody the question: what does a sustainable civilization look like, and how can we get there?"

Considering the trajectory it seems we are headed, it's no wonder that such a genre it's getting more and more traction, even in the medium of video games. After the release of Cyberpunk 2077 (CD Projekt Red, 2020), emblematic title in the depiction of bleak technocratic futures, many journalists started to wonder if maybe what we actually need is a more hopeful outlook on the future, one that shows us our potential to prosper, not to destroy[2]. In this project I tried to define a path towards rhetorically charged but communally created games, following the ideals of Solarpunk not only to showcase a preferable future, which shouldn't be the end goal of speculative design (Coulton et al, 2016), but involving different perspectives and people in the design process, and by co-opting a methodology from commercial applications. This is not only resonant to Solarpunk's relationship with technology, heavily centered on re-appropriation and creative reuse (Flynn, 2014), but with the guidelines for speculative design established in Speculative Everything (Dunne & Raby. 2014).
The paper will start by reviewing the topic of utopia and dystopia in contemporary games in order to create the context for the project. Solapunk and its games will then be overviewed, highlighting core elements and potential issues with the genre. The methodology will be supported by an exploration on the concept of preferable future in relation to speculative design, and finally a report of the co-design process is going to be analyzed and discussed.

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[1] Coulton, P., Burnett, D., & Gradinar, A. (2016). Games as speculative design: Allowing players to consider alternate presents and plausible features. DRS2016: Future-Focused Thinking.
[2] Gailloreto, C. (2021, January 3). Why there should be more video games with solarpunk settings. ScreenRant.

Literary and theory review

Utopias and dystopias in contemporary games

"Utopias are useful because they point to a direction. We need to dream something before starting to develop it." (Pedercini, 2017)

This is what game creator and academic Paolo Pedercini, better known as Molleindustria, wrote in an analysis of his project Lichenia (Molleindustria, 2017). The text reads like a manifesto for more awareness surrounding underlying rethorics in games, as well as a call for more hopeful game simulations that dare to dream of different futures, embracing the fact that "virtual worlds are always in some basic way the expression of utopian desire.' (Galloway, 2006)'. Lichenia (Molleindustria, 2017) is a perfect example of his theory in action, as he breaks city building games conventions, addressing the climate crisis as a post-zero sum game, mindful of both human and non human agents, without resorting to enemies to defeat or clear objectives (Merlin, 2020). However it is apparent how in the last decade, and even beyond that, game narratives have been exploring mostly dystopian settings, and when they indulged in apparent utopia, have done so with little critical awareness.

"The prophets of doom are unusually loud in our time, and almost every vision of the future, whether by sober ecologists or wild-eyed science fiction writers, carries with it the stench of despair. The collapse of civilization has become its own narrative cliché." (Heer, 2015)

The current environmental crisis has certainly reinforced a bleak vision of the future. This imprinting of doom has also been supported by a spectacularized vision of the apocalypse based on the dogma of continuity (Blecic & Cecchini, 2008), which falsely postulates how big causes are needed for big effects: our world will be burned in a glorious blaze by a comet or a nuclear disaster, not slowly suffocated by centuries of careless resource exploitation.
It doesn't help that utopias have generally developed a reputation for being deluded or even dangerous (Dunne & Raby, 2014). The argument is that Fascism and Stalinism were born out utopian thinking, but that is because speculative scenarios had been taken for solid truth to enforce on the masses: as the Frankfurt school identified in the '80s, institutions we take for granted are actually social construct and can be challenged and modified (Schulzke, 2014). Dunne and Raby point out that Utopian fiction is not there as a manual to show the road to a better life for everyone, step by step, but actually a beacon to remind us that a different tomorrow is possible. Trying to force a utopia into reality would paradoxically lead the Utopia to cease existing, since it will not function as an ideal scenario for a more perfect society (Mannheim, 1985). Having established the general contemporary cultural propension towards dystopia and the function of hope in utopia, we will now examine their applications in games. In The Critical Power of Virtual Dystopias (2014), Schulzke argues that game utopias have generally failed because they tend to just reproduce current social structures without challenging them. This is what happens in games like SimCity (Maxis, 1989), which Pedercini critiques for reinforcing biased views on urbanism and trivializing the issues of city planning through

the "tabula rasa" concept, which negates any pre-existing state of the territory to be developed. It's a clear example of a game that could be considered utopian, but only from the privileged and static point of view of modernist urbanism. Schulzke also disproves the utopic claims of online multiplayer games: while these games might offer unique possibilities for marginalized people, they still offer tools to the player to reproduce the same exact dynamics that lead those groups to be marginalized in the first place (Schulzke, 2014). The author sees much more potential in the work done with game dystopias, praising how they force players to participate in the reproductive systems of the dystopia and how their size and scope can allow to explore different aspects of the fictions in a dynamic way difficult to achieve for a novel, which point of view tend to be static. The counterpart of this argument is that not always players understand and absorb the intended critical message. I will add that poor writing and an emphasis on flashy graphics has led for many players to a fetishization of what the dystopia stands for. In a call for narrative fiction to go beyond the apocalypse and dystopias Hull writes:

"We desperately need narratives that move past apocalypse as an endpoint, not only because there are people and societies already living in the Western world's vision of climate apocalypse on a daily basis, but because looking at the climate crisis as an apocalypse can only inspire a helpless waiting for the post-apocalypse to arrive, suddenly, to cleave the past from the future." (Hull, 2019)

This sentence summarizes the latent need in current fiction for renewed hope, and the potential of games to experiment and dream of new scenarios has definitely the potential to fulfill this call for change.

Solarpunk and greenwashing

In 2021, suspiciously close to the release of Cyberpunk 2077 (CD Projekt Red, december 2020), on a couple of major gaming news websites a cry for change could be read in the headlines.

"Why there should be more video games with solarpunk settings"[3] was published on Screen Rant and "Enough cyberpunk-it's solarpunk's time to shine"[4] was challenging readers on Pcgamer. In these articles the authors express the already cited need for hope, lacking in the grim fictional dystopias video games like to set themselves in.

"Without the counterbalancing narrative of more optimistic stories, though, it's easy for people to get the impression that it's impossible for society's problems to be solved" (Gailloreto, 2021)

In their interview with independent game maker Phoebe Shalloway (Ong, 2021), Ong even cites directly the aforementioned Cyberpunk 2077 (CD Projekt Red, 2020) as a disappointment, associating it to Hot Topic looks and recycled stories. The journalist also mentions how our current

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[3] Gailloreto, C. (2021, January 3). Why there should be more video games with solarpunk settings. ScreenRant.
[4] Ong, A. (2021, April 28). Enough cyberpunk-it's solarpunk's time to shine. pcgamer.

reality unironically seems to buy in the tropes of tech-fueled consumerism that the genre originally stood against. On the topic Shalloway expresses to be bothered by how cyberpunk "often gets carried away fetishizing the high-tech world it so ostensibly critiquing… " and how this can lead to self fulfilling prophecies if not counterbalanced by more hopeful visions for the future that distance itself from our current trajectory (Ong, 2021). But what is this Solarpunk that the articles seem to propose as an alternative?

The sleek machines
traverse the land
like gilded towers.

Their footsteps
enrich the soil.
Their tongues
purify the water.

This short poem, written by Jack Pevyhouse for the collection of stories Sunvault, Stories of Solarpunk and Eco-Speculation (Wagner & Wieland, 2017) can help get an understanding of what shape this new genre of fiction is taking. Technology not as a destroyer or master of the ecosystem, but as an active part of it. Cohen summarized three kinds of environmentalism, all inspired by Alex Steffen (2003): light green, dark green and bright green environmentalism (Cohen, 2021). Light green environmentalism is essentially neoliberalism coated in chlorophyll, the status quo is not disrupted and corporate entities act as keeper of natural rhythms while pursuing their financial goals. Dark green environmentalism is the romanticized view of nature as a divine thing to be protected, and sees technology as a menace. Bright green instead seeks in open source technology and innovation a road to sustainability. Solarpunk can be seen as a bright dark green kind of environmentalism: it embraces technology as part of nature and as a powerful tool for emancipation, but remains carefully aware of the social implications both of technology and hierarchy[5].

While many pieces of fiction have been retroactively assimilated in the solarpunk canon, such as Ecotopia (Callenbach, 1975), a utopian novel that explore concepts such as communes, decentralized cities and consensus based legislation, and even Nausicaä of the Valley of the Wind (Studio Ghibli, 1984), the origin of the term can be traced back in the late 2000's, first in small blogs[6] and then, just a couple of years later, on Tumblr, where it started to develop an established aesthetic. In 2014, Flynn tried to summarize the neo-born genre in a proto-manifesto. There he stated how it's becoming harder and harder to be under thirty and a futurist, and how the promises offered by individualistic transhumanists are ultimately for the few and unsustainable. Flynn describes Solarpunk as about "ingenuity, generativity, independence, and community. He also pointed out the importance of the suffix -punk in the name: the counterculture nature of the genre it's important to contrast the aura of nihilism that saturates sci-fi, and the tool of choice for this act of resistance is infrastructure (Flynn,

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[5] A solarpunk manifesto (English). ReDes - Regenerative Design. (n.d.). Retrieved February 12, 2023, from https://www.re-des.org/a-solarpunk-manifesto/
[6] "From Steampunk to Solarpunk". Republic of the Bees. April 30, 2008

2014). In this first attempt at defining the boundaries of Solarpunk, and in other subsequent endeavors[7], common aesthetical traits started to emerge: art nouveau and its appreciation for organic shapes and artisan work, age of sails contraptions sprinkled with pedals and solar cells, creative reuse of pre existing infrastructures, and non-western autoconstruction principles like Jugaad. Despite not being present in any of the cited articles, another archetype that is strongly associated with the genre is the green skyscraper - or vertical forest. By googling solarpunk one can be inundated by sleek white silhouettes adorned in vegetation. This is particularly evident when generating images tagged "Solarpunk" with AI, denoting their statistical incidence.

img 1: "Solarpunk City" prompt on DeepAI.com

While the images produced are certainly evocative of a greener future, this is actually a sign of how light green environmentalism is appropriating this new genre of fiction. The efficacy of vertical gardens for example is contested by many for its general flashiness while demanding heavy maintenance cost for little results[8],[9]. An even more antithetical appropriation can be observed in what is perhaps the piece of solarpunk media with the highest production value: Dear Alice (The Line, 2021) depicts a little farmstead in the near future, where machines help attending to animal and plants, green fields can be seen till the horizon and the omnipresent green skyscrapers dot the skyline. The project is however a commercial for the dairy company Chobany and as such, its not so subtle message is that through technology and better landscaping we can keep sustaining the dairy industry.

A youtube user by the name of "Waffle to the left" created an edit of the commercial, removing any product placement from it, stating in the description how the original "was an advertisement for a dairy company, and my solarpunk vision doesn't have either of those things." (Waffle to the left,

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[7] A solarpunk manifesto (English). ReDes - Regenerative Design. (n.d.).

[8] Ing, W. (2021, November 3). Is the boom in green roofs and living walls good for sustainability? The Architects' Journal. Retrieved February 12, 2023

[9] C., L. (2021). *Vertical Gardens, Green Cities and greenwashing*. LinkedIn.

2021). This episode shows how, despite its youth, Solarpunk is going through the same co-opting processes the Cyberpunk went through, with the risk of losing its hopeful and critical values rooted in social ecology (Bookchin, 1995) in favor of greenwashed aesthetics at the service of corporations. I will argue that there is still hope for hoping, and the evolving environmental crisis will only make the genre more and more relevant. This sentiment seems to be shared by Gailloreto, who acknowledges how, in particular referring to games, "True solarpunk video games wouldn't just bombard players with images of moss-covered buildings and rooftop gardens. They would also include gameplay that demonstrates the social ideas associated with solarpunk: direct democracy and consensus-building" (Gailloreto, 2021). Ong also writes in their article that perhaps we still haven't realized yet how angry we should be at the current situation, and demand from the media to learn to hope again. (Ong, 2021)

State of the art on solarpunk games

In the late 2010's, as Solarpunk started rising from its niche forums and hacker blogs to the state of a promising and hopeful aesthetic movement for our age of climate crisis, the first explicit entries of the genre in the video game medium started to appear - and even more, following the cultural zeitgeist surrounding environmentalism, not explicit ones. Still, as we will examine in this chapter, the genre doesn't have representation in mainstream game culture, and it's still mostly relegated to small experimental projects, like the games developed by Phoebe Shalloway, or to additional content for other releases, like the Green Cities expansion for City Skylines (Colossal Order ltd, 2017). On the topic of the predominance of dystopia in video games Shalloway said the following:

"It's really easy to get cynical when you start thinking about capitalism, which is actually exactly why cyberpunk is so much easier of a genre to write for than solarpunk."[10]

In the same article she also explains how, according to her, ""A role of artists in our time can be to prepare society for a positive response to the coming changes". This is reflected in her games: Solarpunkification (Phoebe Shalloway, 2018) and Even in Arcadia (Phoebe Shalloway, 2019). In the first one she exposes through tactical gameplay the antagonistic nature of being a climate rebel. The player will have to avoid police in a gray urban sprawl while committing various acts of guerrilla gardening, similarly to the aptly titled Guerrilla Gardening (Hyperlink your Heart, n.d.). In Even in Arcadia instead the author explores through a narrative game the consequences of unchecked resource exploitation in a far away future, all while creating a commentary on the current tendencies to create beautiful artificial ecosystems to be enjoyed by the wealthy. Similar warning can be also played in the far more abstract Daydreams is Red (Colestia, n.d.), which juxtaposes dreamy and lushious urban landscapes to the reality of living in a small apartment surrounded by imposing cement buildings. All of the cited games, with the exception of the City Skylines (Colossal Order ltd, 2017) expansion, can be found on Itch.io under the solarpunk tag. Exploring the category certain

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[10] Ong, A. (2021, April 28). Enough cyberpunk-it's solarpunk's time to shine. pcgamer. Retrieved February 12, 2023, from https://www.pcgamer.com/enough-cyberpunkits-solarpunks-time-to-shine/

patterns are evident: with the exception of some more abstract or narrative games, like the one cited previously or Solare (Lost & Found Games, n.d.) the vast majority heavily uses resource management and city building mechanics. Titles such as Reclamation (Zebulah, n.d.), Solarpunk Engeneer[11] (Redray, n.d.) and Solarpunk: Failed States (Africacross Games, n.d.) all put the player in charge of an urban environment in which they try to construct environmentally friendly buildings, technologies and politics. While these games can be a powerful rhetorical tools to unveil the processes underneath environmental problems (Bogost 2008), I will argue that they often trivialize the issue in the same way Adam Curtis accused ecologist appropriating cybernetic theory of doing[12]. By ignoring the complexities of sociality and the individual perspective, they unconsciously perpetrate a deterministic view of nature that can be simply fixed with technological solutions.

The issues with Solarpunk aesthetics already discussed also manifest themselves in some of the most recent upcoming titles that, with no subtlety whatsoever, called themselves Solarpunk. One of them is being developed by Broken Totem Studios and seems to be in earlier stages of development, the other is developed by Ciberwave and it's set to release in 2023. The Broken Totem Studios Solarpunk present itself a shooter, all the interactions present in the trailer are of gun combat and platforming: nothing in the gameplay or narrative seems to be congruent to the genre, but the developers took the sleek aesthetics of vertical forest and green skyscrapers and built a shooter around them. Cyberwave's Solarpunk appears to be a more genuine endeavor. The game it's a survival co-op game set on floating islands where the players are given the tools to farm and create their own buildings. Solar panels, wind turbines, crop fields and airships are all heavily present in the marketing. What is however lacking is any form of opposition to this bucolic state of things, delineating the game more as a fantasy for escapism than a future to fight for.

As we have seen explicitly solarpunk games often ignore fundamental traits of the genre, due to the scale of the project or for a misunderstanding of the subject matter, in particular they rarely tackle the sociopolitical sphere and they often avoid the subjective perspective.
During my research however I had the pleasure to discover and play two releases who effectively encapsulate the Solarpunk ethos, despite not presenting themselves as such.
Sable (Shedworks, 2021) it's an open world exploration game set in a post-apocalyptic planet covered in deserts and wastelands. The focus of the game is surprisingly not fighting hordes of mutants and aliens, but to explore the planet, get to know its history and ecology, and interact with the various communities to ultimately find one's vocation in reaching adulthood. The game gives a perspective on an alternative relationship with the land and its communities, on belonging and on family. This fluid society in which rituals are established to aid an individual to find one's vocation and community, which might not be their original family thus breaking an established hierarchy, call back to anarchist views such topics (Bookchin, 1995). Even more apparent is the connection between Common'hood (Plethora Project, 2022) and Solarpunk. The game doesn't show you possible futures, but concrete realities: you are a young girl evicted from her house due to her impossibility to pay her

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[11] note: it's not a misspell, that is the actual title
[12] Curtis, A. (Director). (2011). The Use and Abuse of Vegetational Concepts [Television series episode], All Watched Over by Machines of Loving Grace. BBC Two.

late father's medical bills. The player finds themselves occupying and reshaping the old factory where the player character's father used to work. Together with the other squatters you start tidying up the space and making it livable. This is made possible through a free form construction system and even by the possibility of creating your own blueprints for projects, which can then be built by NPCs or shared online with other players. The characters in the factory are there for different reasons, and by helping them to create better living conditions for everyone you'll uncover their stories.

Common'hood (Plethora Project, 2022) presents common living, reappropriation of corporate property and self-sufficiency in agro-technical and architectural skills as a possibility for the present, and this makes it deserving of the solarpunk moniker much more than both of the games explicitly titled Solarpunk.

A pitfall of Common'hood is certainly the limited interactions with the NPCs, which after a couple of tasks effectively become completely subservient of the player character, extending her building and farming possibilities. Ultimately, a game that illustrates the complexities of social living in an environmentally conscious commune is yet to be developed, and this opens an interesting and relevant possibility space.

Speculative design and preferable futures

This paragraph sets the approach towards a speculative methodology that will be further discussed later in the paper.

To explore Solarpunk meaningfully in the context of games, it is key to get an understanding of speculative design. Speculative design has been seen as a part of critical design practice (Dunne & Raby, 2014) or as its own practice (Coulton et al. 2016), and it involves applying design practice without commercial constraints in order to inquire on alternative future through prototypes (Auger, 2013). To examine futurity Dunne and Raby suggest a model based on four Ps: possible, plausible, probable and preferable future. The concept of preferable future is a sensitive one: Dunne and Raby, while acknowledging that speculative designers should not fool themselves into prophetic escapades, see the preferable future as the end goal of the design process for a particular group of people, it has to become an agreed vision manifested in the design (Dunne & Raby, 2014). In Games as Speculative Design (Coulton et al. 2016), this perspective is criticized: the authors suggest that while the personal biases of the designers cannot be avoided, they should be fully transparent and disclosed, and ultimately the preferable future should only be part of the internal design process to determine the scenario. I agree with the authors that in order to mitigate the influence of the preferable future while still tackling the desired scenario, "Speculative Game Design should embrace the plurality of realities of both designers and players" (Coulton et al. 2016), including co-design practices inside every step of development. Doing so will also deflect the accusation made by Martins to the field of promoting elitist views that privileged people impose on others (Martins, 2014). Another risk often associated with speculative design and fiction is of being reductive, overly simplifying the subject matter and hiding rethorics underneath a superficial layer of verisimilitude. Blecic and Cecchini wrote that "a bit of reductionism is inevitable in every (model of) explanation or interpretation, and the only reductionism to avoid is that which pretends to shift systematically and

infallibly between different scales and levels" (Blecic & Cecchini, 2008). This means that speculative designers shouldn't be scared of their results, as long as those are not sold as predictions but as thought provoking tools for imagining different realities. They also put emphasis on how, specifically when tackling social issues that, according to them, are impossible to predict, or other wicked problems such as climate change (Coulton et al. 2016), it's important to look both at the past and the present. This aspect is also echoed by Coulton,Burnett and Gradinar, who see an honest historical look at the present and the past as the best way to reach a probable future inside a scenario (Coulton et al. 2016). To conclude this literary review I would like to spend a few words on the specific potential of speculative games.

"Thus while games differ from the majority of design fictions this should not be seen as a disadvantage as mimesis in games makes the action closer to a lived experience and, coupled with a strong narrative, can produce powerful affects on the player." (Coulton et al. 2016)

This effect is similar to Bogost procedural rhetoric (Bogost, 2007), and the authors are aware of this fact. However they also point out an important difference between persuasive games, associated with said rhetoric, and speculative games. The goal is "exploration and reflection", not persuasion (Coulton et al, 2016). This doesn't mean that speculative games or speculative design processes can't employ procedural rhetoric, in fact that is just impossible to do, but these rethorics should be embraced and disclosed in the design process, and shouldn't be the ultimate objective of the design speculation.

Objectives

Considering the analyzed literature, this paper aims at exploring solarpunk through speculative and co-design methodologies, with the objective of defining the worldbuilding for a potential computer rpg that makes the player confront the issues of communal living, consensus decision making and social ecology, remaining faithful in themes to the Solarpunk movement but not necessarily in its aesthetics.

Methodology

The methodology chosen to conduct this research doesn't come from HCI or game design theory, but actually from service design: Storytelling group (Kankainen et al. 2012).
This method is based on co-design and narrative storytelling, and involves the designers setting up a customer journey and various scenarios in the context of a service with complex interdependencies extended in time. The designers guide a group of people belonging to the selected demographics through a timeline of events, asking them to create their own personas and to imagine their interaction with the service at every branching point. A "creative secretary" asks questions about the

service and encourages dialogue on the emergent topics, while the main designer keeps track of everything said by the participants and conducts the story. The result of this process is a multitude of customer journeys that shed light on different approaches to the scenarios.

The method was chosen due to the participatory role playing aspects of it, that makes it particularly suited for procedural rhetorics, and for the long and complex time frames expected in the service industry.

"... it does not focus only on the service under design but during the storytelling the participants naturally talk about the other services they need in their life situation and as a part of their everyday practices." (Kankainen et al. 2012)

This sentence highlights how the flexibility offered by storytelling methods allows one to approach broad topics in an holistic way, leading the designer to explore future possibilities in a way that would be overwhelming for an individual, if not impossible due to their pre established biases.

However, due to limits to the scope of this project and its speculative design ambitions, some changes have been made to the proposed formula. The absence of a second designer created a situation where the time frame of the session had to be stretched and segmented.

To add co-design elements to the scenarios themselves, a separate debate session on the topics was organized beforehand, and in the introduction to the main session the results were still discussed and reshaped together with the participants. Furthermore, due to the broad speculative nature of the project, it was impossible to delineate a precise timeline of events, so unconnected situations replaced it instead. Overall much more emphasis was put on the creation and exploration of the scenarios rather than in obtaining a precise customer journey timeline. While in every step of the project, references and data was always used to establish the likelihood of a certain future, the end result doesn't have any empirical data, but it's an amalgamation of stories leading to and surrounding precise visions for the future disclosed in the scenario: a solarpunk communal future contrasted by a neo-liberal eco-capitalist status quo. By incorporating co-design even more than the amount suggested by the original author, I hope to follow the guidelines defined previously and shift the intent from persuasive to speculative.
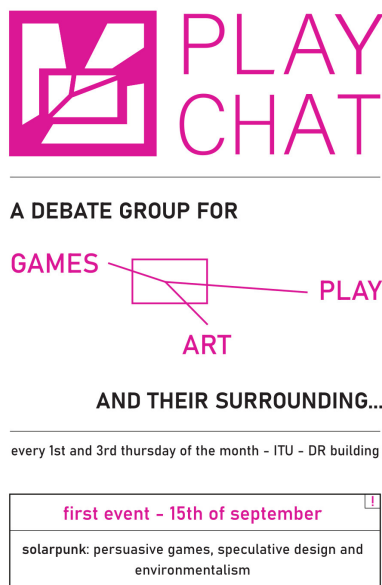
Analysis

The Play-Chat session

During the autumn/winter season of 2022/2023 a series of student organized debates called Play-Chat was organized at the IT University of Copenhagen. This allowed students to discuss a subject loosely related to games and playful media in an horizontal way. The debates were opened by a host, who prepared and shared academic readings and recommended media before the event. The host then guided open ended debates organically between all the participants, whose number fluctuated between 12 and 30. The majority of the participants were students either of ITU or of

KADK, the Danish academy of art and design. The host intervened to moderate the debate only when the subject discussed spiraled too much out of the framed theme or to encourage different people to express their opinion. This created an environment where ideas were expressed and challenged rapidly and fluidly, covering many aspects with a variety of perspectives.

Play-Chat revealed itself as the perfect environment where to set the basis for a solarpunk scenario in gaming, as well as to question its relevance and antithesis, the current neo-liberal green economy we are clearly headed towards. I decided then to host an event around this theme. Doing so allowed me to incorporate co-design and challenge my rhetorics with a multitude of people even before starting to consider the scenarios.

Here are some of the ideas that were shared and discussed during the debate, and that informed subsequent phases of design:

- Solar panels in general have been questioned as being not as sustainable or versatile as one would think. The counter argument is that even if certain types of solar panels have been adopted as a "silver bullet" all encompassing solution, this is not actually what Solarpunk proposes. Panels are just one of the tools available and as symbols they can generate a powerful aesthetic.

- Many participants shared the sentiments expressed in the Gailloreto and Ong articles: shallow glorification of dystopia in cyberpunk games, and overall need for change and hope. One of the participants said how "It almost seems goofy imagining humans not as exploitative of nature", unveiling the conditioning against hopeful thinking present nowadays.

img 2: Play-Chat poster

- Compromises, consensus making and general social issues have been identified as the true challenges of communes; a participant declared how many communes that could be seen as utopian still suffer from problems such as gender segregation. The problem is organization, and according to the debate participant this is why many Solarpunk games have been approaching the genre with management mechanics.

- It was noted how the oppositional nature of Solapunk is what makes it interesting and creates potential for interesting conflicts in gaming. The same person added that focusing on small communities might be detrimental to the genre, as the challenges of scaling up the approach are important to tackle, not to incur in an elitist and segregated vision that excludes

the majority from it.

- Finally, while some of the participants were seeing solarpunk as the hope that a generation that lost a lot and keeps losing needs, others questioned the ethnocentric nature of its aesthetics, suggesting that the non-western elements are only extrapolated to build a better future for the nord of the globe. While cultural appropriation is definitely an issue that solarpunk artists and designers must be aware of, this is a problem that mostly surfaces on the shallow artistic rendition of AI images covered in vertical forests, of which troubling nature I've already previously discussed. If the core values of social ecology on which the genre is based are considered in world building, cultural influences can be intertwined without decontextualizing them. Solarpunk must not be monolithic but plural, where different people with different needs create communities and learn from each other.

After this debate a core statement to define the underlying rhetoric was written: a more sustainable future without exploitation is not possible under neo liberal technocratic capitalism.

The co-design sessions

After reevaluating the basis of the project through the Play-Chat debate, three sessions of co-design, each of them roughly lasting three to four hours, were organized to follow up with the methodology. In the first one the participants, after being explained the core statement of the project spawned by the previous debate, were introduced to the first scenario, the eco-capitalist society, which then has been expanded and modified with their feedback and references. In the second session they analyzed the second scenario, the solarpunk commune. In the third and final session each participant created personas and imagined them going through a set of storylines crafted in collaboration with them and based on the two scenarios.Four participants took part in the process: two of them with a background in psychology and two in sustainable design.

img 3: co-design flow chart

The scenarios

The two scenarios were presented to the participants with the following elements:
- A table listing the core elements of the society containing: values, politics, relationship with nature, relationship with technology, economy, religion and beliefs, needs, ambitions and potential conflicts. I partially pre-compiled the table following on one side Solarpunk and eco-social ideologies, and on the other a distillation of current eco-capitalist tendencies.

- A moodboard, each composed of six images, suggesting visual representation for nature, accommodation, technology and transport in the two scenarios.
- A diagram containing the technologies potentially used in different fields by such society.

img 4: moodboard for the eco-capitalist society

In the first session any ideology present in the scenarios was explained and exposed to the participants, who then proceeded to contest and enrich the elements during the course of eight hours, bringing new references and points of view. The additions brought by the participants to the scenarios are too many to list, but just to cite a few, they opened new perspective surrounding welfare, entertainment and sex work, all topics not touched in the initial pre-compiled technology tree and society table.

img 5: moodboard for the solarpunk society

The personas

Once the two scenarios were collectively iterated upon, the participants were then asked to create personas to populate the scenarios. For each persona they had to consider:

- **Name and age**: to identify the character
- **Main activity**: to contextualize to societal role of the person
- **Needs, ambitions, conflicts and personal relationship**: to determine key driving forces useful to take hypothetical choices upon.
- **Relationship towards nature and towards technology**: to pay extra attention to the eco-technical aspect of life, congruently to their importance in solarpunk.

In total ten personas were created, five per scenario, covering a diverse demographic range and avoiding overlaps.

The storylines

Originally the storyline section of the method closely resembled the original service design reference, with a detailed journey through an average day of a possible citizen. However, due to time constraints caused by constant confrontation and iteration, just four main micro-storyline were explored for each persona. These were:

- **Work**: meant in a broad sense, to envision the daily tasks and duties of an individual, which were clearly less defined in the solarpunk scenario
- **Commuting**: to tackle directly the issue of infrastructures.
- **Relief, relax**: to focus on new evolutions on entertainment and on work/leisure separation.
- **Sustainment**: to remain practical on the basic survival needs of the individual.
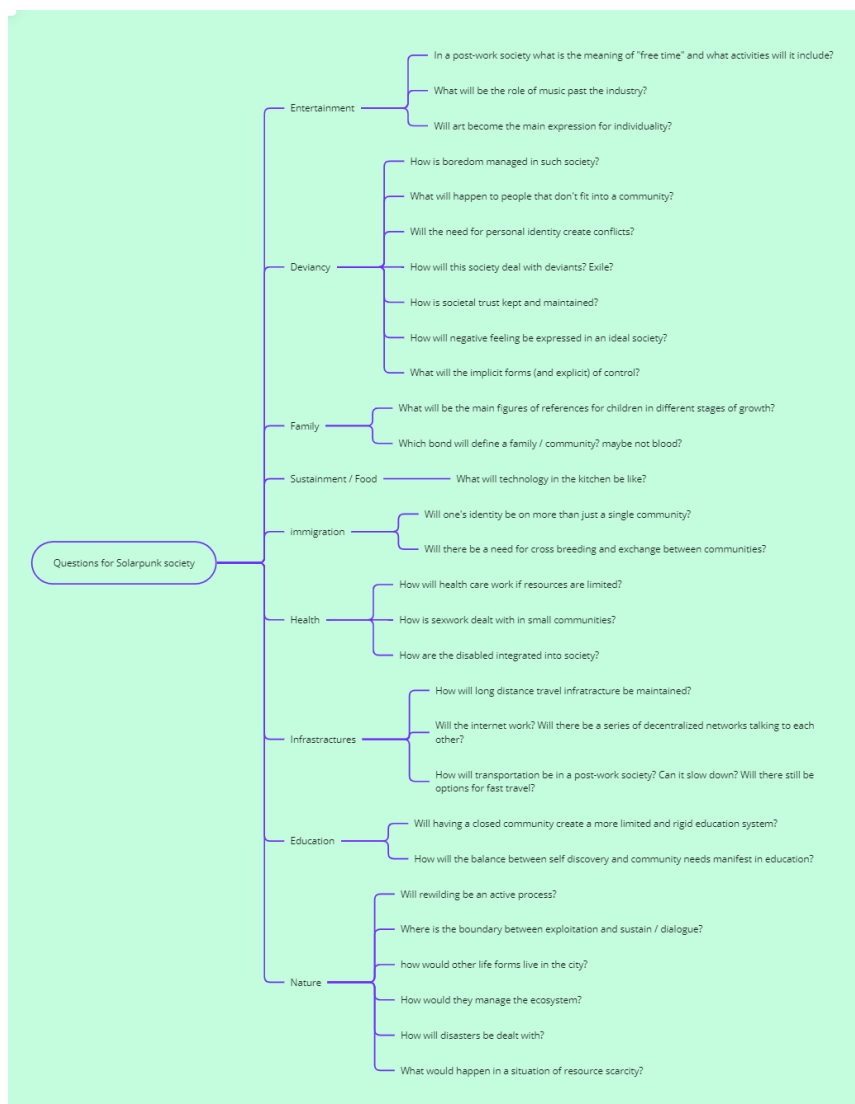
For each persona a single line was written by the participants to describe that specific micro story, and the result was an ulterior reevaluation on the core values and technologies of the established scenarios, specifically on transport infrastructures and recreational technologies.
For example in this phase the concept of slow traveling through pulled air balloons emerged, creating an alternative that is both practical for movement without infrastructure, coherent with the post-work ideology of the solarpunk scenario in which it is set, and resonant to the already established aesthetics of the genre.

Discussion

Process overview and results

Overall the process achieved its goal of producing through playful collaboration the basis for a solarpunk game world based on co-design. Following the principles that speculative design shouldn't try to foresee the preferable future but let the players explore a variety of possibilities (Coulton et al, 2016), the end result wasn't a vision built up by clear answers, but a set of correlated questions that the designers could explore in different trajectories to create one or many game worlds.

img 6: end result for the Solarpunk scenario

During the final review of the three co-design sessions, the problems and topics emerged by the collaborative analysis and storytelling where recompiled, as suggested in the Storytelling group methodology with its "creative secretary" role, in a branching tree of useful questions to answer when finalizing the world-building. However this is were some of the first issues with the

methodology can be spotted: the absence of a creative secretary during the session made it so that this tree could only be compiled at the very end, without giving space to the participants to meaningfully question it or try to give answers. The time required for the modified method also grew significantly: even without counting the four hours for the Play-Chat debate, which set the basis for the scenarios, the whole process took over twelve hours, ten more than the ones suggested in the original methodology. This is to be attributed both by the aforementioned lack of a creative secretary to keep focus on the subjects and explore surfacing topics as they first emerge, and to the increased inclusion of the participants in the design process. The original authors come to the table with pre-determined scenarios driven by the needs of the service, but in order to "decouple oneself from industry" and "collectively define a preferable future" (Dunne & Raby, 2014) a more active participation was required.

The compromise was the necessity to cut down on the amount of storylines explored: issues of social and jurisdictional justice for example couldn't be tackled during the session, and while the participant brought up insights related to those topics that have been integrated in the final branching tree, these were organic observations and not born out of the role playing exploration with the personas. In the end, the amount of references and observations gathered in the process were invaluable in creating the foundation for a more in depth dive into the two scenarios.

Envisioning the worldbuilding

To manifest and give shape to the co-design process, as well as test the applicability of the method, the tree of question born out of the storytelling was unfolded and converted into references for Alberto Longo, the comic book artist who collaborated in this phase of the project.

The intention was to create a small slice of a world, based on solarpunk principles, while not forgetting that Solarpunk should "merge the practical with the beautiful, the well-designed with the green and lush, the bright and colorful with the earthy and solid"[13].
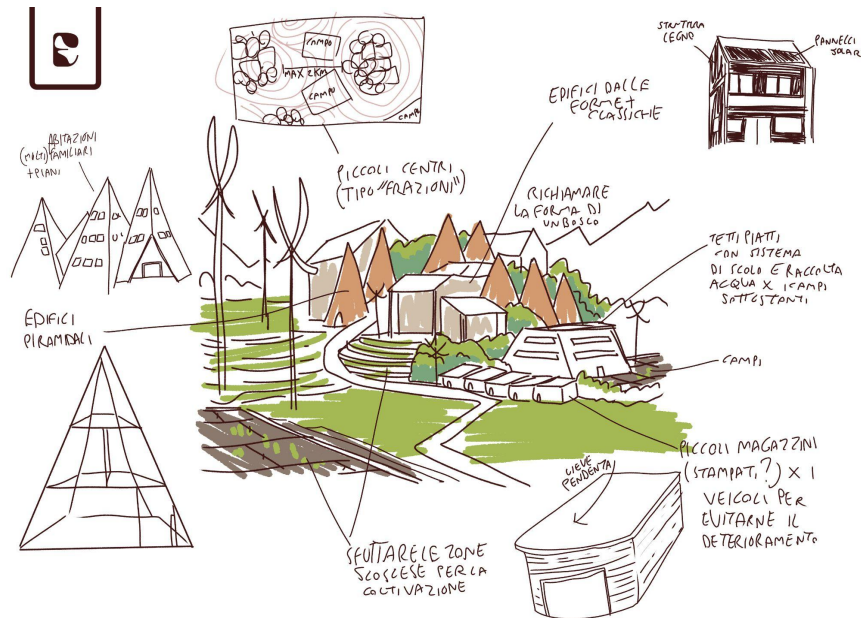
Sadly time constraints made it impossible to showcase also the critical dystopia (Schulzke, 2014) part of the project, detracting from the antagonistic values of the genre. Still, by showcasing environmentally and socially minded speculative designs, the drawings remain true to the principle of infrastructure as an act of resistance (Flynn, 2014), especially when one inevitably makes associations with the current world, unsettling the present rather than predicting the future (Morris, 2009).

Infrastructure

Taking at heart the critique of potential cultural appropriation expressed during the Play-Chat debate, we decided to work on an environment both me and Longo are acquainted with: the alpine ecosystem. References for appropriate designs were gathered from multiple sources: from experimental autoconstruction to the endeavors of big architectural firms. The pyramid shape for the houses in the village for example was inspired by Sayama Forest Chapel (Nakamura, 2016), and both in form and function is congruent to its environment. The pyramid shape calls back to the pine trees

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[13] *A solarpunk manifesto (English)*. ReDes - Regenerative Design. (n.d.)
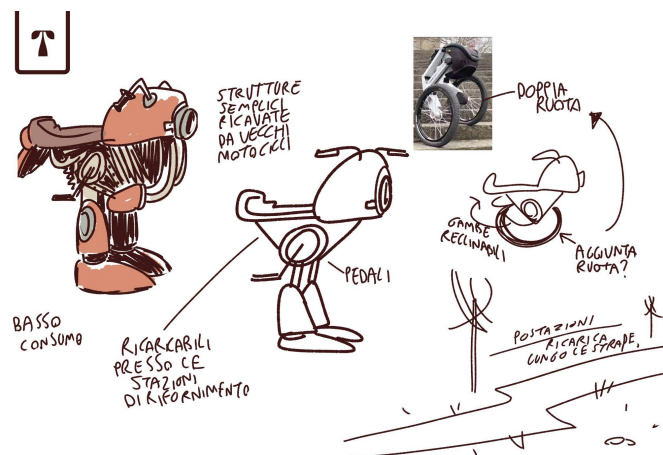
of the regions, which also made up the majority of the construction material, keeping the supply line local. It also helps in flowing the snow to the side of the building. Another aspect of the concept which leans towards bright green ecology (Cohen, 2021) is the presence of automated farms, inspired by the current work done by FarmBot (FarmBot, 2014), an open source project for CNC greenhouses and farm plots.

img 7: sketches for an alpine Solarpunk city

Transportation

For transportation we considered how relying on big infrastructures such as roads and charging stations would lead to a need for more versatile vehicles, both in terms of the surfaces they can traverse and by which means they power their motion. This became a design principle that stated that every mean of transportation should have an alternative power source. One of the designs drawn is an electric walker made of recycled materials, which can also operate on electrically assisted pedals. Colloquially we started referring to this approach as "Pedal-punk".

img 8: sketches for hybrid electrical / pedal transportation systems

Character design

In the clothing we really wanted to avoid the hyper functional aesthetic often associated with sci-fi: as previously stated solarpunk should not forget the cultural significance of beauty and self expression. Inspired by the work of Melanie Nutz (2020) on upcycling fabric, the resulting designs are eco-conscious while maintaining self expression. They also represent how our speculated society would deal with surplus production from a distant past, which would become potentially a great source of materials that can be infinitely reshaped and transformed.

img 9: sketches for upcycled clothing and textile materials

Conclusion

While conducting the co-design process was challenging, the end results show how it can be applied to generate a vision of the future which, while still being rooted in the designers rethorics, can be more inclusive and participatory, avoiding a narrow point of view that would make the process less speculative design and more fiction. Further testing could be made on the methodology, employing more designers to take a part of the burden off the participants and shortening the overall length. It would also be interesting to continue the development of the game, bringing the discovered traits and principles into mechanics, to finally connect the procedural rhetoric utilized in the process to the design object itself. It is yet to be seen if new, more collectivist and hopeful futures where we question our relationship with nature and technology will become mainstream in computer games or other media without the risk of transforming into propaganda for the eco-capitalists' elitist view of environmentalism. However, this paper illustrates how by adopting playful and transparent rethorics in a shared design process, we can double check facts and embrace plurality in a future that becomes preferable not only for the designers, but for many others.

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img 10: render for the characters

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Images

- *Cover: Longo, A. (2023). [Render of the Solarpunk alpine town].*
- *img 1: DeepAi, (2023) [Generated image of a Solarpunk city]*
- *img 2: Cibrario Nona, S. (2022). [Play-Chat poster for Solarpunk debate]*
- *img 3: Cibrario Nona, S. (2023). [Diagram for the co-design process]*
- *img 4: Cibrario Nona, S. (2022). [Moodboard for Eco-capitalist scenario]*
- *img 5: Cibrario Nona, S. (2022). [Moodboard for Solarpunk scenario]*
- *img 6: Cibrario Nona, S. (2022). [Branching questions for Solarpunk society]*
- *img 7: Longo, A. (2022). [Sketches for Solarpunk town]*
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