Art, energy, and technology: the Solarpunk Movement

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The purpose of this text is to reflect on how science fiction enables criticism on the road to modern technology. Imagination has allowed us to think of some ends of the world, but it has been a privileged space. Creating alternative futures for our relationship with energy is vital. Corporate renewable energy projects are emerging in corners of the planet where green capitalism has not yet reached. In this way, the creation of alternatives to centralized and corporate models of energy production, distribution, and consumption must go through new potentialities to inhabit new possible futures. Science fiction is a literary genre that has inspired generations of people assembling art, techno-science, utopia, and dystopia embedded in a political design. Solarpunk has consolidated itself as an area of counter-cultural hope to enable us to overcome socio-ecological injustices and increasing epistemic and ontological violence. This genre is derived from other currents such as Cyberpunk, Steampunk, and Dieselpunk, elucidating another relationship between technology, society, and nature, nourished in turn by climate sci-fi, Indigenous, and Afro-futurist science fiction. In this sense, a concept revision is made in three spheres: i) historical, based on its digital origins; ii) literary, based on the edited anthologies and iii) academic, of the reflections that it has raised. In the final section, concluding remarks are presented and the Solarpunk Manifesto, unveiled in early 2020, is shared to continue its co-creation.

Key Words:

Solarpunk; Science Fiction; Afro-Futurism; Renewable energy; Energy decolonization

INTRODUCTION

We have to postpone the end of the world. As Ailton Krenak states in his book "Ideias para adiar o fim do mundo" (2019), for him, other ways of thinking about the world are required and particularly, other ways of relating to it, to ourselves as part of nature, beyond the Cartesian duality imposed by Eurocentric thinking. In the end, to decolonize our being, knowing, thinking, and doing. It is imperative to reflect and envision alternative worlds through the role of engineering and its socio-ecological implications. In particular, the effects of energy and mineral use resulting from technological development. As opposed to the possibilities of another possible technology by expanding the spaces of imagination.

Our relationship with energy as a human collective has gone from understanding it as a fundamental part of life on the planet, maintaining its ecological and spiritual dynamics intrinsic relationship with nature. As the Yukon flats people who have "*a conception of energy as a manifestation of moral relationships among animals, people, and land*" (Chapman, 2013, p. 105), to be a commodity traded on international markets that are negotiated by companies and states, pursuing the extractive regimes of colonial and neo-extractive economies of green capitalism. To make energy another element of the transaction of nature, with which, protected in sustainable development, capital wishes to expand into territories that it had not been able to conquer. Now, from within the Trojan Horse of corporate renewable energy, as a modern instrument of neocolonisation of territories and imaginary.

RENEWABLE ENERGY AS A CORPORATE MECHANISM OF DISPOSSESSION

Transnational corporations all over the world are building mega-projects with fresh green paint, particularly in the Global South. Projects that affect the ecological, cultural, and political conditions of the territories even deprive them of their rights. Wind projects that take the name of a spiritual being (Jepirachi) of the Wayuü community in Colombia and affect their relationship to the land (Noriega, 2020); Dams such as the Velo Monte on the Xingu River, which displaced about 25,000 people in the town of Altamira and 18.000 traditional inhabitants of the river bank (ribeirinhos) in the Brazilian Amazon (Fearnside, 2017); and Corporate solar initiatives that have caused damage to the geoglyphs (large patterns in the form of animated figures) in territories that have been inhabited by indigenous communities in Blythe, California, US (Mulvaney, 2013).

From the increase of distributed environmental conflicts around the world -mainly based on unlimited energy consumption, especially in the Global North-, environmental justice has emerged as a space of academic and activist dispute for the analysis of these ontological conflicts, in the sense of worldviews and livelihood disputes (Blaser, 2013, 2019). One of the main projects to understand the global dynamics of green capitalism is the digital platform World Atlas of Environmental Justice. In July 2020, this initiative registered about 3,215 cases of environmental conflicts (see Figure 1). In particular, there are 402 conflicts over Dams and conflicts over water distribution, 19 conflicts over Solar Energy Projects, and 5 conflicts over Wind Energy Projects, the latter registered under the Clean Development Mechanism.

Figure 1. Global map of environmental conflicts. Source: <https://ejatlas.org>

According to this, the generation of energy driven by consumption to feed the accumulation of capital makes countries like India, Brazil, China, the United States, and Colombia the five nations with the highest number of environmental conflicts on the planet. Thus, the exploitation of energy is one of the vectors of the neocolonization of territories affecting mainly indigenous and peasant communities. In this way, the decolonization of energy is necessary to inhabit potential futures, including the decolonization of renewable energies, under which territories are monopolized by their green veil. These projects affect millions of lives and ecosystems in the light of sustainable development, removing concepts of collective well-being as an alternative to hegemonic development since 1949.

Decolonizing energy, then, is a profound collective process to deconstruct the relationship that industrialized society has woven with energy and its connection with nature, an input for production and consumption that feeds unlimited economic growth. Therefore, this adventure should be nourished by the debates, questions, and ideas of decolonial studies and struggles of social and popular movements, one of the many academic groups in Latin America was the Modernity/Coloniality (Escobar, 2003; Quijano, 2000). Meanwhile, in terms of social movements, we can suggest Rios Vivos in Colombia and Oilwatch International, as well as the coalitions toward energy democracy (Hess, 2018).

However, this process should not only be treated in the Global South. Energy decolonization also goes through the Global North, it is a process that encompasses all geographies by the hand of social movements, among them Black Lives Matter in the US (Lennon, 2017), Standing Rock movement in the US, and Komi Movement in Russia (Tysiachniouk, et al 2020). It is a complex undertaking, which must be imagined and created from the plurality of social, cultural, political, and material dimensions represented by social movements, activists, and academics, to be as

broad as possible. The latter allows a space for the groups and collectives that are daily carrying out these struggles from the territories, but at the same time, spaces are needed to dispute the imagination not only from the technical but from the arts.

SOLARPUNK AS AN INHABITABLE FUTURE

Art and technology play an essential role in the creation of other possible worlds. They have been doing so for decades and centuries. Literature, especially science fiction, has been fundamental to thinking about how the world will be in the future. This literary place was the birthplace of Solarpunk. This is an aesthetic, philosophical, and activist movement that emerges at the beginning of the second decade of the 21st century in Brazil, particularly in 2011 as a response to the dystopian pessimism of other creative efforts. This movement is characterized by the creation of speculative worlds where social ecology, democratic technology, and solar, wind, and tidal energy are crucial elements for collective well-being that surpass the capitalocene and its roots in social inequality and the extraction and burning of fossil fuels. As Misseri (2017, p. 48) notes “*a utopian -or dystopian- author is a political designer*”, then, every single form of science fiction is a design of power relationships.

Solarpunk is defined as an uprising of hope against the daily despair that these times bring. This movement may be considered as a countercultural rebellion to supplement literary pessimism in visions of how the future may be possible (Solarpunk Anarchist, 2016). In particular, this effort could open the space to re-imagine the relationship between technology - society - nature, beyond the dichotomy between culture and nature, driven by colonial thought. However, as a space for future creation, it is crucial to expand people's dynamics to generate collaborative processes of imagination and materialization through collective action.

The term Solarpunk was initially coined in a blog called [Republic of the Bees](#) on May 27, 2008. Inspired by a new technology called "Beluga Skysail" to use the wind and complement the voyage of cargo ships to reduce their energy consumption. This narrative emerged as an alternative to the Steampunk movement, which is based on steam technology and Victorian aesthetics. It complements other science fiction genres such as Dieselpunk, Cyberpunk, and Ucronies. Therefore, it is called to inspire ethical-political actions, through an eco-futurist aesthetic, Sylva (2015) points out that it is a movement of counter-cultural hope to face the processes of accumulation, inequity, environmental degradation, control of corporations and the state over our life. Hope, then, can nourish the spaces of autonomy. We can trace its roots to the short story [Sultana's Dream](#) wrote in 1905 by Begum Rokeya, a Muslim woman. That, despite not distinguishing itself as a Solarpunk work, it has elements of art, technology, and sovereignty from a feminist perspective (Rokeya, 2005).

At the editorial level, in 2011 the first call for Solarpunk writings was oriented in a language that is not precisely English -the hegemonic language in science fiction literature-. In 2013 the first collective book was published in Portuguese with nine stories entitled "[Solarpunk - Histórias ecológicas e fantásticas em um mundo sustentável](#)" (Lodi-Ribeiro, 2013). This seminal work on *porvir otimista* or optimistic future collects a set of short stories on the alternative uses of energy,

particularly, solar. One of the stories is titled *Sol no Coração (Sun in the Heart)* by Roberta Spindler, where the energy is generated from tattoos made with nanodevices.

Then, a process of collaborative construction through the Internet begins, passing through references in magazines such as [WIRED](#), websites such as [Tumblr](#) or [The Conversation](#), events in cities such as Portland (United States), Barcelona (Spain), or Berlin (Germany), and even universities, as is the case of Arizona State University. In the latter, Adam Flynn a researcher and artist launched a small text in 2014 that revolves around the notes towards a manifesto for Solarpunk (Flynn, 2014). This is considered a seminal text, which allows the expansion of the movement towards other spheres.

Since then, a series of works have been created around this genre from a [video tutorial](#) on how to make a solarpunk story by Max E. Westfall, and some anthologies among which we could find: *Wings of Renewal: A Solarpunk Dragon Anthology* (Arseneault & Pierson, 2015); *Viral Airwaves* (Arseneault, 2015); *Mars trilogy* (Robinson, 2015); *Sunvault: Stories of Solarpunk and Eco-Speculation* (Wagner & Wieland, 2017); *Ecopunk! - speculative tales of radical futures* (Grzyb & Sparks, 2017); *Glass and Gardens: Solarpunk Summers* (Ulibarri, 2018); *Glass and Gardens: Solarpunk Winters* (Ulibarri, 2020) and one about feminist science fiction stories revolving around the bicycle, *Biketopia: Feminist Bicycle Science Fiction Stories in Extreme Futures* (Blue, 2017).

These collections of short stories open a wide space in terms of fantasy and political situation, from biomechanical dragons, poetry, to the bicycle as a medium to new futures beyond ecological disruption. In addition to these mostly anthological works of literature, Eschrich and Miller (2018) edit the book *The Weight of Light: A Collection of Solar Futures* from the Center for Science and Imagination at Arizona State University. This work focuses on solar energy as a place of enunciation and dispute, where writers and academics converge to analyze each of the four stories in the book. The latter offer new insights on energy and technological research, but also in urban planning and social justice.

Collaborative practices have emerged alongside fiction stories. Story exchanges have been created around Solarpunk ("Sol. Punk Exch.," 2018); comics, such as *Opening into wings* (Wilson, 2019); zines such as *Optopia A solarpunk zine* (Optopia, 2019), *Solarpunk as Fck*, *OBSOLETE*, among others; illustrations such as those by Rita Fei (Image 2); and collaborative groups across various digital platforms. However, this movement is also criticized, especially around the little diversity of its authors and the inclusion of elements outside the anthropocentric vision and technological development. Thus, zines such as *Omenana* (Omenana, 2017) and critiques made by Rob Cameron focusing on the absent relationship between Afro-Futurism and Solar Punk (Cameron, 2019a) and the Social Justice as a survival technology (Cameron, 2019b), those efforts contribute to the plurality of this movement.

Besides the artistic world, Solarpunk is gaining momentum in various scenarios, in the one hand, collectives of makers/hackers are dissecting their actions and reflections towards the materialization of practical experiences in various places, a couple of cases are: first, Ellery Studio in the city of Berlin (Germany), with the Solar Punk Festival (SPF) in 2018 and the Solar

Punk Futures project, which brings together "scientists, researchers, and visual thinkers to investigate the energy transition from the solar-punk perspective" (Holleran, 2019, p. 56). Meanwhile, in second place was the workshop "Solarpunk and solidarity economies // Intro", which was proposed at the intersection of solidarity economies and live coding as a critical perspective to the blockchain and encrypted protocols (Luna, 2020). This action took place in Bogotá (Colombia) in the year 2020 in the middle of the Bogotrax Festival.

Image 2. Our Lives Are Not Our Own. Source: Rita Fei (<https://www.artstation.com/ritafei>)

Another scenario where an analysis momentum is taking place is in the academy. In which, this genre has been a matter of reflection since 2015, since Kujawski's seminal work in the area of media studies and its relationship with ecology. This author raises the concept of technological poets to refer to people enrolled in this cultural movement (Kujawski, 2015). Other areas of interest have been comparative literature, in particular through the analysis of four anthologies (described above) through the concept of social ecology and posthumanism (Schuller, 2019), while the humanities have analyzed the formal, semiotic, and aesthetic dimensions of existing solar technology, and the types of fantasies and imaginaries that such technology facilitates (Williams, 2019). Finally, the artistic and cultural movement of Solarpunk has awakened the

interest of academics around sustainability, in particular, the pedagogical possibilities that utopia represents (Johnson, 2020).

Along with Solarpunk, the climate fiction movement (Cli-fi) and the anthropocentric fiction movement have emerged as parallel narratives for the future. Milkoreit (2017), analyses the promises of this literary venture and its implications for coming prospects. Some of Cli-fi's anthologies are *Everything Change: An Anthology of Climate Fiction I* (Milkoreit, Martinez, & Eschrich, 2016) and II (Dell & Eschrich, 2018). Finally, Indigenous Sci-fi is becoming a wide space for [under-represent authors](#), especially on the journey of decolonizing literature and sci-fi, creating alternative futures. The anthology "Walking the clouds" edited by Dillon (2012), has been one of the first attempts towards a visible work of indigenous writers to nurture the speculative area of science, technology, art, and possible futures.

FINAL REMARKS

Energy is a space of imagination and appropriation of the territory. For some years now, energy sovereignty has become a reference for the struggles of communities and in particular their future (as in the book edited by Eschrich and Miller in 2018). Thus, energy sovereignty refers to "*projects and political visions towards a just generation, distribution and control of energy sources by mobilized communities with an ecological and cultural base*" (Del Bene, Soler, & Roa, 2019, p. 178). The movements for energy sovereignty occur in both urban and rural scenarios, seeking fair energy transitions as an alternative to private and public macro-projects of renewable energy, focused on supplying international markets and associated large mining operations. In this sense, from the La Guajira (Colombia) territory are emerging multiple initiatives around revisit the energy concept, creating pedagogical processes to foster new imaginaries, technologies, and futures (Reina-Rozo, 2021).

Imagination, then, is a mechanism through which we can transform our collective future using speculation. In this way, we must create spaces to extend and share the imagination, since this can be considered a privilege and not a space to think, feel, and make a future from the place-based communities. In front of this, some elements to complement this movement are the concepts of *conviviality*, which raises the possibility of creating cordial worlds (Barkin, 2019; Illich, 1973) and, *communality* as a process of collective transformation from the cultural traditions linked to the territories (Esteva, 2015). In this case, books as *Sunvault: Stories of Solarpunk and Eco-Speculation* (Wagner & Wieland, 2017) and *Biketopia: Feminist Bicycle Science Fiction Stories in Extreme Futures* (Blue, 2017), notes that a set of technologies are transforming into conviviality tools used to created conditions for a transition towards the communality.

Returning to Krenak, a process to postpone the end of the world will pass by the decolonization of energy, reflecting on which activities we must continue and which not. Return to ourselves and our relationship with nature, where one of its essential elements is energy, and its influence on life. Moreover, the imagination and creation of Indigenous and Afro-futurism are key to make more plural and foster diversity beyond the colonial ontology. For instance, the Wakanda imaginary is fostering emerging conversations in the sphere of design and FabLabs (Dando et al.,

2019), and academic research, particularly ecology and evolution (Schell et al., 2020). In that sense, one more aspect is needed to reflect and reshape, the conception of the “future” as a fragment in linear time, just after the present. As the Aymaran aphorism states “Qhip nayr uñtasis sarnaqapxañani” (Looking to the past to walk through the present and the future). This will be useful for Solarpunk to promote socio-ecological transformations to walk with other ontologies and epistemologies.

Therefore, Solarpunk has a preponderant place to integrate its vision, creativity, art, and aesthetics to the alternatives to the development or to the great transitions that are taking place in diverse geographies. The *pluriverse* (Kothari, Salleh, Escobar, Demaria, & Acosta, 2019), is a conceptual and diverse space that embraces transformative initiatives from the peoples of the world and can feed the Solarpunk movement from many perspectives (See work of). Then, given that this movement is still in formation and construction, it is worthwhile to nurture the future of this movement from Latin America and in particular around questions that revolve around: how can Solarpunk contribute to the creation of possible futures in the region? what would be the differential elements of a Latin American Solarpunk? What elements of the popular struggles can nurture this literary genre and cultural movement? How could Latin American thinking on art and technology be integrated into the Solarpunk movement?

A final element in this process of thinking the dynamics and aesthetics of artistic creation can be the concept of “disoñar”, this was coined by the Colombian activist, designer, poet, and cultural manager Leon Octavio, where he raises the need to populate the design, from the dreams (Cited in Escobar, 2017). Thus, dreams become -again- important for design, in other words, dreams as a mechanism for the collective creation of perspectives and possible futures. So, let’s dream. Finally, to complement this reflection is sharing the [Solarpunk Manifesto by The solarpunk collective](#) (2019). This manifesto was published at the beginning of the year 2020 on the Regenerative Design website and we need to continue its awareness and practice.

A SOLARPUNK MANIFESTO

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?” The aesthetics of solarpunk merge the practical with the beautiful, the well-designed with the green and lush, the bright and colorful with the earthy and solid.

Solarpunk can be utopian, just optimistic, or concerned with the struggles en route to a better world, but never dystopian. As our world roils with calamity, we need solutions, not only warnings. Solutions to thrive without fossil fuels, to equitably manage real scarcity and share in abundance instead of supporting false scarcity and false abundance, to be kinder to each other and to the planet we share.

Solarpunk is at once a vision of the future, a thoughtful provocation, a way of living, and a set of achievable proposals to get there.

1. We are solarpunks because optimism has been taken away from us and we are trying to take it back.

2. We are solarpunks because the only other options are denial or despair.
3. At its core, Solarpunk is a vision of a future that embodies the best of what humanity can achieve: a post-scarcity, post-hierarchy, post-capitalist world where humanity sees itself as part of nature and clean energy replaces fossil fuels.
4. The “punk” in Solarpunk is about rebellion, counterculture, post-capitalism, decolonialism and enthusiasm. It is about going in a different direction than the mainstream, which is increasingly going in a scary direction.
5. Solarpunk is a movement as much as it is a genre: it is not just about the stories, it is also about how we can get there.
6. Solarpunk embraces a diversity of tactics: there is no single right way to do solarpunk. Instead, diverse communities from around the world adopt the name and the ideas, and build little nests of self-sustaining revolution.
7. Solarpunk provides a valuable new perspective, a paradigm and a vocabulary through which to describe one possible future. Instead of embracing retrofuturism, solarpunk looks completely to the future. Not an alternative future, but a possible future.}
8. Our futurism is not nihilistic like cyberpunk and it avoids steampunk’s potentially quasi-reactionary tendencies: it is about ingenuity, generativity, independence, and community.
9. Solarpunk emphasizes environmental sustainability and social justice.
10. Solarpunk is about finding ways to make life more wonderful for us right now, and also for the generations that follow us.
11. Our future must involve repurposing and creating new things from what we already have. Imagine “smart cities” being junked in favor of smart citizenry.
12. Solarpunk recognizes the historical influence politics and science fiction have had on each other.
13. Solarpunk recognizes science fiction as not just entertainment but as a form of activism.
14. Solarpunk wants to counter the scenarios of a dying earth, an insuperable gap between rich and poor, and a society controlled by corporations. Not in hundreds of years, but within reach.
15. Solarpunk is about youth maker culture, local solutions, local energy grids, ways of creating autonomous functioning systems. It is about loving the world.
16. Solarpunk culture includes all cultures, religions, abilities, sexes, genders and sexual identities.
17. Solarpunk is the idea of humanity achieving a social evolution that embraces not just mere tolerance, but a more expansive compassion and acceptance.

18. The visual aesthetics of Solarpunk are open and evolving. As it stands, it is a mash-up of the following:
 - a) 1800s age-of-sail/frontier living (but with more bicycles)
 - b) Creative reuse of existing infrastructure (sometimes post-apocalyptic, sometimes present-weird)
 - c) Appropriate technology
 - d) Art Nouveau
 - e) Hayao Miyazaki
 - f) Jugaad-style innovation from the non-Western world
 - g) High-tech backends with simple, elegant outputs
19. Solarpunk is set in a future built according to principles of New Urbanism or New Pedestrianism and environmental sustainability.
20. Solarpunk envisions a built environment creatively adapted for solar gain, amongst other things, using different technologies. The objective is to promote self-sufficiency and living within natural limits.
21. In Solarpunk we've pulled back just in time to stop the slow destruction of our planet. We've learned to use science wisely, for the betterment of our life conditions as part of our planet. We're no longer overlords. We're caretakers. We're gardeners.
22. Solarpunk:
 - a) is diverse
 - b) has room for spirituality and science to coexist
 - c) is beautiful
 - d) can happen. Now

The Solarpunk Community

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