

The Upcycling and Reappropriation – On Art-Specific Circular Economy in the Age of Climate Change

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Abstract: Whereas mainstream theories of environmental art and sustainable development consider art as a domain suitable for the application of environmentally friendly procedures, such as the circular economy, trash management and digitization, this research article focuses on the internal development of the autopoietic and self-referential art machine, which generates an art-specific sustainability. The circular environmental economy coexists with the circular art economy, which implies changes in the aesthetics and poetics of the artwork; it deploys upcycling to use art trash in creating a new, higher value object. Art-specific sustainability contributes to the power and complexity of the art machine with new conceptual interventions and devices. These devices allow art to resist threats from other fields and to redefine itself. As sustainable development agendas of international organizations take into account the social, political, and economic initiatives that promote ethics, inclusion, and tolerance, this article discusses the contributions of contemporary environmental art to expanded concepts of the political and science. In particular, art activism, in cooperation with civil society, can be an important driver in areas that parliamentary politics overlooks.

Keywords: environmental art, sustainable development, art activism, art-specific circular economy, upcycling, reappropriation, Anthropocene, social inclusion.

INTRODUCTION

A look at the key agendas of sustainable development contributed by international organizations demonstrates that culture and art receive little attention and are overshadowed by discussions and decisions concerning industry, economics, politics, and the environment. “When the General Assembly of the UN approved seventeen Sustainable Development Goals in 2015, none of the goals referred to the cases for integrating culture into sustainable development planning and decision-making” (Kangas et al. 2017: 131).

Here, culture is referred to in its broadest sense, which also includes quality of life, heritage, transport, urban development, social inclusion and

the fight against social inequality, but in particular, culture in its narrow sense includes primarily art and creative industries. Today, the art is by no means a marginal factor, not only in terms of creativity and cultural innovation but also its noticeable contribution to national GDP and to new jobs. In the US, art contributes more than \$800 billion a year to the US's economic output, which represents 4% of the GDP (Florida, 2019). Disregarding art in global documents on sustainable development means either that art is underestimated or that this omission underlies the assumption that the field of art is not one of the bigger polluters. Furthermore, artistic achievements are difficult to measure and quantify, which is an obstacle for many sustainability studies based on the quantification of achievements; their positivist approach comes at the expense of critical, conceptually powerful and postpositivist analyses (Lahsen 2021).

ART AS RESEARCH AND COGNITIVE SERVICE

The silence of political organizations on the role of art in sustainable development is also related to the ignorance of new social functions of contemporary art that are important for sustainable development. Most of the professionals in the field of sustainable development operate with the traditional notion of aesthetic art, which has been surpassed by the art of the second half of the 20th century. Contemporary, usually post-aesthetic art does not imitate and does not represent external reality—it is not based on the principle of *mimesis* (imitation), but on *poiesis* (creation). It is research and a cognitive service; its stage, desk and recording studio are its laboratories. Above all, art is a challenging societal domain that continually won by fighting against restrictions, coercion, and moralisation so that stricter initiatives from the outside, which would try to ban and restrict anything in this domain, would meet with resistance from artists and cultural policy.

Even if we ignore the new functions and tasks of contemporary art and focus on the established concept of art as we know it, art uses devices that can effectively and convincingly present the goals of sustainable development agendas to the public. Specifically the essential processes for the art system, such as defamiliarisation, subversive affirmation, metaphor, parody, juxtaposition, prank, catharsis and genres such as story and

performance. A number of achievements of modern science have entered the media and gained the greatest visibility when convincingly presented as stories, such as those on cloning (Dolly the sheep), fractals (chaos theory), black holes and the Higgs boson. Art can deeply impact the public's emotions, for example in Chris Jordan's film *Albatross* (2017), rarely leaving us indifferent and cold.

The main emphasis of this article is that many concepts of contemporary art are also useful for sustainable development (Möller et al. 2022). They include circularity (found in art in the form of citations, pastiches, upcycled installations, remixes, the use of components of already realised works in postmodernism and hyperfiction, i.e., cognitive waste management), existential experience (pollution is not something that others warn us about, but rather something that we feel ourselves and try to escape), connecting domains, a sense of diversity and unpredictability, as well as striving for social change. There is art ecology, generated by the institution of art itself in its development and interactions with the environment, and there is environmental ecology. Between the two are intersections (a circular economy in both areas) and divergences (artistic eco-projects and services oppose the holistic approach of political ecology, which abstractly and schematically observes the green planet Earth from some imaginary point of view high above it).

As new societal and cultural paradigms have emerged related to the Anthropocene, sustainable development, blockchain technology, artificial intelligence, and surveillance capitalism, so too the functions of contemporary art have changed. Contemporary art performs a number of functions and services, with the known aesthetic function being only one of many. *Instead of stable work of art this article foregrounds the art service (Strehovec 2020) as a key concept of contemporary art that enables a novel understanding of art as a cognitive, high-skilled, and performative practice, oriented towards tasks, research, knowledge-making, and problem-solving activities. As a cognitive practice, art works hand in hand with other fields of the knowledge society and brings competitive knowledge to the world, knowledge that differs from the knowledge produced by the science-as-we-know-it and is set in the nearness of the knowledge produced by the activities of citizen science and civil society. The contemporary art service can also be applied to political tasks; such service is more subtle than traditional political devices and can be used as a significant tool in civil society engagement (e.g. art activism). The devices of art activism, such as subversive affirmation, making strange (defamiliarization), prank and*

detournement (introduced by the French Situationist movement), can be deployed in civil society and social media political struggles as well. Rather than being an artist-genius separated from everyday people, the contemporary artist is a cognitive worker involved in the hacker class (Wark 2004) and the knowledge society (Castelfranchi 2007).

The art service is situated at the intersection of domains, connecting with non-artistic contents. The result is hybrid art services that include the following:

- Expanded concept of political (in the domain of art activism, which is increasingly integrated into civil society)
- Alternative forms of scientific research (such as citizen science in art)
- Technology and its devices (digital, especially new media art)
- New cultural, philosophical, and societal paradigms (contemporary art is becoming a dry run for their experience, such as the challenges of the philosophies of the Anthropocene, posthumanism and sustainable development).

Artworks/art services introduce us to a 'laboratory' for testing cognitive, emotional, and perceptual patterns that help improve our abilities to discover those aspects of processes and things that science and humanities leave aside. Many philosophers and theorists of cultural studies, as well as practitioners in art and creative industries, have been aware of this power of art and have emphasised that art should be taken as seriously as science when it comes to discoveries and increasing knowledge. Heisenberg, one of the first theorists of quantum theory, has argued that "the two processes, that of science and that of art, are not very different. Both science and art form in the course of the centuries a human language by which we can speak about the more remote parts of reality, and the coherent sets of concepts as well as the different styles of art are different words or groups of words in this language" (1958: 98). The power of art is that it can contribute striking and out of the box ideas about the things and events that science sometimes takes for granted and pushes aside.

CHALLENGES OF SUSTAINABLE DEVELOPMENT FOR CONTEMPORARY ART

Among the 17 UN Sustainable Development Goals, goal 12 aims to ensure sustainable consumption and production patterns, which, like urban development, also concerns art and its production and reproduction. This goal represents a challenge both for artists, in using environmentally friendly materials and energies in their production, and for audiences in arts, in using green transportation to the venue.

When discussing sustainable works/services of art, we first think, according to established notions, of all the works made from recycled materials and objects found in nature, which are usually also placed in the natural environment, such as Robert Smithon's 460-metre-long land art project *Spiral Jetty* (1970), made of mud, salt crystals and black basalt rocks. Andy Goldsworthy's projects also reveal many possibilities opening up to a contemporary artist when working with components found in nature. The challenge, in terms of both sustainable development and engineering innovation, is the work of kinetic art (mobiles, machines, robots), both those that use mechanics and those based on smart modules.

Examples of the use of environmentally friendly energy include Calder's mobiles (2013) and Jansen's kinetic sculptures *Strandbeests* (1990). Calder's mobiles move unpredictably even in low air flow and they are affected by the sun and temperature, while Jansen's machines are powered by the wind on the beaches of Holland. Both artists work in the field of kinetic art; their works are artistic and cognitive services in terms of artistic exploration of movement, especially movement that is economical in terms of energy consumption and leaving no noteworthy carbon footprint. These is research in the subtle wind specificity, which, in the case of Jansen's machines, have been also considered by scientists. Calder's mobiles were initially powered by motors in the early stages of development, but the artist later abandoned motors and linked their movement exclusively to the flow of air.

This distinguishes them from types of installations that are notable energy consumers, such as Jean Tinguely's kinetic, often self-destructive installations, and Yves Klein's fiery sculptures (e.g., *Fire Fountain*). In particular, they differ from the performances of war machines by the Survival Research Laboratories (founded by Mark Pauline), Christo's

heavy land art installations, spectacular theatrical performances and film industry products.

Sustainable art and literature include text written on environmentally friendly media, from the skin of the human body to natural surfaces, such as sand, soil, clay, snow and sky; its reading must be environmentally friendly, without an unnecessary carbon footprint. The book people from Truffaut's film *F 451* represent a version of a living, not paper-bound book. Sustainable text is structured as a story or application, and is rationally, economically organised; it avoids McDonaldised information, is not written in an aggressive and hostile way, and does not refer to content that promotes violence. Beyond the printed page and smart device screens, we should mention Shelley Jackson's *Skin* (2003) and *Snow* (2014), and the author of this essay himself wrote his temporary ©o®on@ poem (2021) on a sandy ground (shortly before a downpour). The temporary nature of a poem means that it does not aspire to eternity, but a temporary, limited event of writing and its enjoyment.

Sustainable development implies a circular economy that requires systemic and holistic thinking. In a circular economy, data is recycled, used for new products. If we apply this to artistic production, we encounter the possibility of using the material already created in past artistic productions, editing, compiling, remixing and commenting on it. Nothing needs to be discarded and there is no art waste because it can be used, or if it is in digital form, it can be discarded in an instant with the delete button. Much has already been described and designed in different ways, but what counts today is ideas and concepts and not new material artefacts.

Consider Goldsmith's reading of Benjamin's *Arcade Project*, which was one of the incentives for his work *Uncreative Writing*. Creativity in the sense of *creatio ex nihilo* is at odds with the circular art economy, which is a challenge for new poetics of recycling, reappropriation and 'literary waste management'. Since modern and contemporary art are essentially tied to the author-name-brand and the narrative of progress and innovation, non-creative writing also raises the issue of authorship. The demand for permanence relates to the poetics of art services and affects the organisation of components and its ideas. Recycling results in a remake, remix, pastiche, quote, reappropriation or re-enactment, and new artistic life is made possible for content that has already been created and used in past projects (e.g., upcycled artwork).

Large art exhibitions (Venice Biennale, Kassel documenta) and festivals (from the Venice Film Festival and the Cannes Film Festival to the Linz digital art festival Ars Electronica) are events with a high carbon footprint. As with presentations of new cars, which initially include data on environmental CO₂ emission caused by each model, cultural events should also be accompanied by carbon footprint data. Artists traveling by plane, train, and car also contribute to pollution. Expectations regarding the emergence of digital society also have pitfalls: consider energy-intensive Bitcoin mining being the main cryptocurrency.

The introduction of currently popular NFTs (Non-Fungible Tokens) is more energy-efficient on platforms where Ethereum cryptocurrency is bought and sold. Thus, alternatives to mining are sought in minting as data validation, new block building, and data storage on the blockchain according to the proof-of-stake protocol (different from the proof-of-work method, which falls under mining and uses a lot of energy to solve mathematical puzzles). In particular, NFT minting on sidechains reduces energy consumption. NFTs are products that presuppose dematerialisation of art-as-we-know-it. Each NFT is unique; other marks are just photos, prints, and remakes. NFTs are sold digitally; buyers, using mostly the Ethereum cryptocurrency, buy and sell their ownership, which, together with other 'metadata,' is authorised and recorded by blockchain technology.

In addition to issues of environmental art (which can be aesthetic, but above all ethical and participatory), the challenge is the institution of art itself, along with its life, which, even without external interventions, produces processes and movements that contribute to sustainable development and are relevant to other areas, specifically the following:

- Conceptualism
- Performance and story
- Dematerialisation of object
- Minimalism
- Carbon-free kinetic installations
- Temporary art instead of monumental artefacts
- Circular economy in art, art waste management, upcycling
- Digitisation (in the field of creation, as well as archiving and documentation), digital and new media art, electronic literature and non-fungible tokens

- The use of natural resources and materials (ecological post-carbon art, eco-cultural tourism)
- The creation of alternative forms of inclusive politics (for example, the Neue Slowenische Kunst State, which promotes global citizenship, Museo Aero Solar as a stateless state), online Temporary Autonomous Zone, coexistence of extreme differences, art activism (in collaboration with civil society)
- Participation in citizen science research

These phenomena and movements, which are the result of artistic development and the interaction of art with the environment (e.g., environmental art), destabilise common views on basic concepts of sustainability, such as circularity. With the history of the internal development of art, we may question the nature of this circularity: Is it the same as in circular economy, or is it art circularity, as demonstrated by Walter Benjamin with his *Arcade Project*, and later by literary postmodernism with quotes? In this sense, Monfort's poetry generator *Taroko Gorge*, who made possible many remixes based on the open source of this digital kinetic poem, is relevant. Everything related to remixes is happening on screens—cellulose-based paper is not involved. It is certainly necessary to shift the focus from the otherwise important role of art in the convincing of the existence of problems, such as the emotionally and existentially experiential based illustration of climate change problems, to the solving thereof, where art as a cognitive service (e.g. Jansen's *Strandbeests*) contributes to new knowledge that is no less important than scientific knowledge on wind energy.

In contemporary art, using waste as a raw material for works of art is close to Romuald Hazoumè's procedure, who in the mid-1980s began the (African) masks series. These masks, made from discarded gasoline canisters, resemble those used in traditional African culture and ceremonies. In explaining these works, Hazoumè has said: "I send back to the West that which belongs to them." (2019) The artists perform the recycling in modality of upcycling as a creative reuse of (artistic) trash to create a new higher value object. Such an attempt to reuse 'cognitive waste' was close to Dadaist poet Tristan Tzara, who in 1920 published the directions for making a Dadaist poem:

- Take a newspaper.
- Take a pair of scissors.
- Choose an article as long as you are planning to make your poem.
- Cut out the article.
- Then cut out each of the words that make up this article and put them in a bag.
- Shake it gently.

These projects coexist with those interventions in art production where there is a direct application of the twelfth sustainable development goal (2015), specifically interventions in the organisation of visual art exhibitions and staging of theatrical performances, such as the sustainable exhibition space BALTIC Centre for Contemporary Art, in Gateshead, which developed a system of re-useable wall panels, designed exhibitions with minimal construction, re-used wood and steel where possible, and specified Forest Stewardship Council–certified wood. For the transport of artwork, it also prioritises sea or rail freight options over airfreight, where possible.

Another example of a sustainable approach to organising and producing art events is demonstrated by the practice of the Young Vic Theatre (2021), which uses stage props from previous performances, uses recycled or locally purchased costumes instead of new ones, saves electricity with LED lighting and reduces the amount of (mainly plastic) waste. In the use of green energy, waste management, and the purchase of items for performances, they try to connect as much as possible with local organisations. They work with the English ecological organisation Julie's Bicycle to mobilise art and culture to act on the climate and ecological crisis.

CONCEPTUALISM, DIGITISATION AND DOCUMENTATION

The internal development of the social system of art in the 20th century, particularly during the historical avant-garde (1905–1933) and neo-avant-garde of the 1960s and 1970s, generated new art movements that are close to the demands of sustainable development, as they often lack environmentally burdensome finished products and produce small amounts of waste. Conceptual art and performance art are examples of such practices. Regarding the former (artistic conceptualism usually refers

to art made from the mid-1960s to the mid-1970s), Sol LeWitt wrote: "In conceptual art the idea or concept is the most important aspect of the work. When an artist uses a conceptual form of art, it means that all of the planning and decisions are made beforehand and the execution is a perfunctory affair" (1967: 67). Conceptuality has also been a companion to contemporary art since the beginning of the 21st century, but it is also found in other domains, such as derivatives (derivatives trade of financial markets), postpolitics and cryptocurrencies.

In the art of performance (Fischer-Lichte 2008 and Dixon 2015), time-limited performance and virtuosity of the performer takes on the role of the idea, connecting both to consider the final product (as a stable work of art) as something secondary (Virno 2004); it is usually absent from The performance as an genre without of stable finished product is articulated in environmental dance performances like the *Global Water Dances* as an international artistic initiative focused on the critical need for safe drinking water. This initiative launched in June 2011 consists of network of dance experts who work with local choreographers around the world to create a biennial international event. It began with 57 choreographic sites and now has grown to encompass 108 participating sites across six continents: "The Global Water Dances project shows that the universal language of dance is a compelling vehicle for communicating ideas about climate change and the environment in an effective and engaging way " (Susan Hoffman Fishman 2019). The performance, and the only thing left is the (media, scientific) documentation and verification by the audience that attended the performance.

When talking about the political aspects of discussions on the Anthropocene, we should draw attention to the critique of anthropocentrism and the consideration of multi-species communities as a topic that artist Maja Smrekar touched upon with her *Hybrid Family* project (2017). Contemporary art also involves digitality (NFT have been already mentioned), which is not only found in the digitisation of art archives but is the basis of video games, new media art and electronic literature which are situated on the screens of stationary and portable digital devices. Much of contemporary art is already being created as digital art (Paul 2015), while experimental textuality and storytelling based on the new sensibility of social media are articulated as electronic literature.

The UN Agenda for Sustainable Development (2015) does not focus only on sustainable forms of production and consumption, which would be a too narrow position. Environment-friendly patterns of production and consumption coexist with the other important goals of that agenda, seventeen in total, which include demands for democracy, peace, social justice and non-violence. While we can achieve the twelfth goal (ensuring sustainable production and consumption patterns) in isolation, we thus generate an island in the middle of an unjust and repressive world, which does not solve today's global problems and encroaches on the rights of future generations to live in a friendly environment. A link between sustainable green principles and social justice, democracy, and a non-repressive society is needed. Creating a model of the social beyond repressive society, for example an art state modelled after the NSK State or as a Temporary Autonomous Zone (Bey 1985), can represent one model, based on profiles of utopian initiatives, of such orientation towards alternative concepts of social organisation.

Paradigms and contents:	Manifestations/ genres in art and literature:	Applications and examples:
Art projects and services that (re)present ecological topics and promote sustainable development	Films, installations, multimedia events, novels, performances	Joseph Beuys' <i>7000 Oaks</i> Chris Jordan's <i>Albatross</i> , Misho Antadze's <i>The Harvest</i> , Eliasson's and Rosing's <i>Ice Watch</i> , Carolina Caycedo's <i>Be Dammed</i>
Art projects based on collaboration with nature that use in nature finding materials – postcarbon art	Land art, site specific installations, environmental art, films	Andy Goldworthy's land art projects, Robert Smithson's <i>Spiral Jetty</i> , 1970
Art services that doing research in new forms of renewable energies and collaborate with science	Kinetic art, wind and solar installations, mobiles	Alexander Calder's mobiles, Theo Jensen's <i>Strand beasts</i> David C. Roy's <i>Mesmerizing</i> , <i>Museo Aero Solar</i> (2007)

Art circular economy as the product of internal development of art; recycling upgraded to upcycling	Non-creative writing, postmodern texts, remix, quotations, re-enactments, upcycled installations	Benjamin's <i>Arcade</i> , Goldsmith's <i>Uncreative Writing</i> , Monfort's <i>Taroko Gorge</i> , Tzara's <i>How to make a Dadaist Poem</i> .
Use of circular economy in organising art exhibitions and performing arts events	Visual Art exhibition, theatre performances	The Young Vic Theatre, BALTIC Centre for Contemporary Art in Gateshead
Environmental art as venue of social critique, including the criticism of Antropocene	Installations, films, research books, performance	Contributions by Tue Greenfort, Hito Steyerl, Bruno Latour, T. J. Demos and Eugene Thacker
Art activism (in collaboration with civil society)	Rallies, pranks, subversive actions, hacktivism, art state, performance, video games	Video game <i>Darfur is dying</i> (2006), Museo Aero Solar, Movement <i>We are 99%</i>
Artistic and literary presentation of ecological topics with the striking special effects; climate fiction	Making strange, montage, stain, juxtaposing, metaphor, over-identification	Cormac McCarthy's <i>The Road</i> , M. Night Shyamalan's <i>After Earth</i> , Hito Steyerl's <i>Power Plants</i> Alexandra Kleeman's <i>Something new under the sun</i>

Table 1: Contemporary Art and Sustainable Development

CONCLUSIONS

What separates this text from established scholarships in the domain of environmental art and its theory is the emphasis on the research nature of such art, based on cognitive services that contribute to the knowledge society equivalent to services in other fields. When it comes to environment-friendly challenges, art does not present, document and illustrate but conducts important research, for example in movement (Calder), wind (Jansen) and solar (Claus) energy, as well as social issues (art activism). Instead of representation as a simple illustration of climate change, it focuses on presentation as the establishment of an intense real-time event that encourages audience participation.

It is part of contemporary art, understood as a decentralised, rhizomatic machine that revolves to changes in components and movements; this machine reacts flexibly to changes in the environment, as interactions with it constantly change the position of its centre. Contemporary art has developed its own method, in a way that it arranges cultural content as a story and presents it as a performance. Even scientific discoveries must progress through the *dispositif* of staging and storytelling because they benefit from staged confrontation of views and involvement in story dynamics. Both story and performance allow science to enter the public space and the dialectic of confrontations.

When presenting their findings at international conferences with state-of-the-art presentation, a presenter is not only a scientist but also an artist. Artistic performance and story are media through which scientific hypotheses can be tested in the public space. Storytelling does not pose data and narratives as adversaries, rather it joins them as complements in the sense that the database needs a narrative, and vice versa. Environmental art transcends traditional divisions, with both the aesthetical and ethical coexisting within it, which have often contradicted each other in autonomous modern art, and encourages collaboration with citizen science, creative industries, social media, civil society, and environmental activism.

Conceptualism, circular economy with art waste management, alternative forms of social inclusion (including multi-species communities), and research in wind and solar energy highlight the inherent potential for sustainability within environmental art. What is at play in environmental art (and climate fiction) is a cognitive sustainable development that refers to a mental and spiritual paradigm shift. Even trash can be transmuted from its material modality with a carbon footprint to one spiritual and cognitive. Sustainability also implies compactness and survival.

This text has considered contemporary art in its expanded concept (Beuys), but it has also introduced an expanded concept of science (including citizen science and activism) and an expanded concept of political. Environmental art as a movement in contemporary art is associated with civil society and citizen science (Trouille et al. 2019), and as a cognitive activity it mediates between science and traditional literary culture.

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Bioprofile

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