



Article

## Beyond Fraudulent Hopes Versus Despair: The Potential Of Commons-Based Technological Futures

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### Abstract

*This paper explores how the commons foster the construction of an alternative technological pathway premised on a shared vision for a sustainable future. First, I delineate the shortcomings and biases of dominant techno-optimist narratives and advocate for a nuanced understanding of technology. Further, assuming that collective action encourages hope and vice versa, I discuss the potentiality of commons-based institutions as catalysts for systemic changes at both local and global levels. The paper offers a practice-informed perspective, drawing insights from the illustrative case of Tzoumakers — a commons-based grassroots initiative that develops open-source agricultural technology.*

### Keywords

Commons, Cosmolocal Production, Techno-optimism, Collective Hope, Collective Action

### Introduction

Our era is marked by an existential anxiety associated with the multidimensional environmental, social, and cultural degradation linked to neoliberalism. This anxiety finds little solace in Western and Westernised societies, which grapple with a fractured connection to living systems, weakening community bonds, and the assault of rationalisation on spiritual awareness. The lack of effective solutions to address the escalating crisis has reignited a discourse on hope for a more sustainable future (Blühdorn, 2017; Gunderson, 2020; Kleres & Wettergren, 2017; Pleeing et al., 2021; Ojala, 2023; Sangervo et al., 2022).

Technology is pivotal in this discourse, embodying both optimism and pessimism (Huber, 2023). Advanced technology, or in other words, high-tech, is thus viewed either as the panacea for survival or as a poison threatening humans and the planet (Lemmens, 2011). For techno-optimists, high-tech will save humanity from impending environmental catastrophe and alleviate the burdens of human existence (Hui, 2017). However, numerous critiques, accompanied by growing evidence of the destruction caused by the capitalist techno-economic trajectory, show that blind fixation on the possibility of a sustainable and just future mediated solely by high-tech is misleading (Hornborg, 2024). The dominant institutions, which accommodate corporate interests, encourage the uncritical adoption of techno-optimism while impeding alternative pathways (Blühdorn, 2017; Drahos, 2004).

Moving beyond techno-optimism does not mean abandoning hope or denying the potential of high-tech for sustainability. Instead, I discuss a different direction, acknowledging that a reductionist approach to technology fails to address sustainability challenges (Hornborg, 2024; Paulson, 2024). Moreover, it overlooks that the current power structures driving technological progress foster “fraudulent” hopes (Bloch, 1959/1986). Drawing from the discourse on hope, futures studies, and the political economy of the commons, this paper underscores the importance of cultivating awareness of technology (Hui, 2022; Bridle, 2018; Feenberg, 1999) and of the political significance of hope (Lindroth & Sinevaara-Niskanen, 2019). The argument posits that a conscious engagement with technology is essential to enhance people’s ability to distinguish harmful hopes from actual possibilities for equitable

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sustainability.

In tackling the challenge of cultivating awareness and encouraging people's agency, the paper explores the potential of developing technology based on the commons. The commons refers to a context-adaptive system of collective self-organisation, governance, and production that prioritises socio-ecological well-being over monetary value (Bollier & Helfrich, 2019; Kostakis et al., 2023a). Based on the idea that action can lead to hope (Kleres & Wettergren, 2017; Ojala, 2023), I conceptualise the commons as an institution that, unlike dominant ones, may help a collective practice of hope to emerge organically from the bottom up, countering the prevailing corporate-driven technological monoculture.

To enrich this conceptual paper, I use a pertinent example of a grassroots initiative called Tzoumakers. The initiative is based in a remote Greek village and is dedicated to developing open-source technology for small-scale agriculture. Tzoumakers serves as an illustrative case study providing insights into an emerging commons-based configuration for technology production. This configuration, called "cosmolocal" production, promotes sustainable and convivial practices for technology development (Kostakis & Tsiouris, 2024). Moreover, the community-oriented work of Tzoumakers provides a practice-informed foundation for exploring commons-based institutions through the lens of hope.

The paper is informed by my dual perspective on the case study as both a practitioner and researcher, following a "pracademic" approach (Rau et al., 2018). Namely, I am an integral member of the Tzoumakers community and an affiliated researcher with the research collective P2P Lab, which played a foundational role in conceiving the initiative. The paper draws from various sources related to the work of Tzoumakers, such as activity reports and meeting proceedings. It also includes subjective observations and interpretations of my participatory experience of the initiative's activities and interactions with other community members. Lastly, my long-standing engagement with the local communities where the initiative operates has further enriched my understanding of the initiative's goals, impacts, potentials and obstacles.

The paper resonates with efforts to bridge social action and academic research, adopting transdisciplinary modes of knowledge production. Moreover, by focusing on the timely issue of technology, the paper seeks to contribute to the literature that explores future possibilities beyond the systemic failures of dominant institutions. Lastly, the paper explicitly supports and advances the scholarship that sees the commons as fundamental to dealing with the problems of the present while collectively building a better future for the next generations.

The remainder of the article is structured as follows: Section 2 introduces the theoretical foundations of the paper, including a critical overview of hope associated with technology, and the commons as an institution of collective action and hope. Next, section 3 presents the grassroots initiative of Tzoumakers to enrich the theoretical overview with insights from a practice-informed perspective. Section 4 discusses pivotal aspects of the alternative technological pathway exemplified by the case study. Lastly, section 5 provides concluding remarks and avenues for future research.

## Theoretical Background

### **On hope and technology: acknowledging the limits of techno-optimism**

"Technology will save us all" (Farmer, 2023) is a familiar quote, suggesting that high-tech holds the key to a better, more sustainable future. However, while such a techno-optimist idea opens a window of hope, it may also be deceptive. That is because techno-optimism is currently rooted in narrow, Western views of technology, premised on modernist thought, emphasising mastery over nature and imposition on other cultures (Feenberg & McCarthy, 2023; Hui, 2017; Paulson, 2024). Furthermore, techno-optimism may incorporate biases that require attention when considering the political context of hope (Lacelle-Webster, 2023; Lindroth & Sinevaara-Niskanen, 2019; 2022).

The dominant technological trajectory has been criticised for its historical association with discriminatory systems (i.e., colonial, racial, and gender systems) (Barca, 2020; Irwin & White, 2019; Paulson, 2024). Additionally, in line with the capitalist dogma of economic growth, "Western technology" prioritises monetary profit maximisation over the common good by promoting accelerated innovation and efficiency optimisation (Pansera et al., 2019; Pansera & Fressoli, 2021). However, the intertwining of growth and innovation overlooks the profound

implications of high-tech artefacts and their related processes. This neglect therefore extends to how artefacts are designed, manufactured, used, maintained, and discarded (Giotitsas, 2019). These processes can include excessive resource extraction and energy consumption, labour exploitation, toxic waste, data acquisition, and planned obsolescence (Fraser, 2019; Lange et al., 2020; Kostakis et al., 2023b; Krebs & Weber, 2021; Sovacool et al., 2020).

Furthermore, high-tech has arguably lost its social purpose, leading to various forms of alienation associated with neoliberalism (Brownhill et al., 2012; Huesemann & Huesemann, 2011; Irwin & White, 2019). This shift diminishes human agency and impedes people's ability to comprehend and engage with technology (Drechsler, 2020). Moreover, the planetarisation of Western technology marginalises technological pluralism rooted in diverse cosmologies, epistemologies, and values (Calisto Friant et al., 2023; Hui, 2022; 2023). Similarly, technological globalisation is uncritically accepted without regard to locality-specific nuances and potential power imbalances (Jambadu et al., 2024; Hui, 2022).

The mainstream sustainability discourse (e.g., green growth, ecomodernism) favours the adoption of eco-efficient and "smart" technologies and emphasises the importance of technology transfer for the Sustainable Development Goals (Corsi et al., 2020; Kasinathan et al., 2022; Komatsu & Rappleye, 2023; Managi et al., 2021). Furthermore, this discourse approaches sustainability as a purely technical problem, suggesting that techno-fixes or efficiency improvements can address the deepening crisis (Huesemann & Huesemann, 2011). However, these assumptions ignore high-tech's unpredictable long-term impact and the broader ontological and political context (Hornborg, 2016). In this sense, techno-optimism, anchored in the delusion of technological salvation (Hornborg, 2024), denies the destructive nature of the dominant trajectory and overlooks the inherent complexity of sustainability (Blühdorn, 2017; Dillet & Hatzisavvidou, 2022).

Recognising techno-optimism's myopic perspective does not necessarily lead to techno-pessimism (rejecting hope or the sustainability potential of high-tech). Instead, debunking techno-optimism could offer the grounds for transcending the unconscious fixation on fraudulent high-tech-oriented hopes while encouraging the exploration and development of alternative technological pathways. However, enhancing the capacity to hope for, imagine and develop alternatives requires space for exchange, and experimentation. Next, I discuss how this space can be created and facilitated through the commons.

### **Commons as institutions of collective hope: moving beyond techno-optimist stagnation**

Considering the interweaving of hope into politics (Boucher, 2020; Lacelle-Webster, 2023), techno-optimism aligns with what Drahos (2004) terms "public hope", which is imposed and managed by the state with the support of corporations and scientists. This top-down encouragement of hope aims to maintain the status quo while delaying and limiting social action (Haro, 2010; Drahos, 2004; Lindroth & Sinevaara-Niskanen, 2019). Trust in social and democratic institutions is necessary, though, for the rhetoric of public hope to be effective (Krafft et al., 2023; Stahl, 2019). Despite recent studies indicating a decline in this trust (Merkel & Lührmann, 2021; Van Prooijen et al., 2022), the prevailing belief that there is no alternative to the current techno-economic system leaves us exposed to the passive adoption of techno-optimist preachings.

Before succumbing to despair, however, and beyond disempowering, distracting, or manipulative expressions of hope (Lacelle-Webster, 2023; Lindroth & Sinevaara-Niskanen, 2019), other positive expressions could encourage social agency. As Fard (2023) argues, hope also has a destabilising capacity against established power structures when grounded in collectives rather than individuals. According to Braithwaite (2004), "collective hope" involves a process whereby individuals genuinely and critically share a vision of desired social change, understand and commit to shared goals, and see the possibility of achieving them through cooperation. In this sense, collective hope and collective action are mutually interrelated. As opposed to public hope, collective hope "is owned by the people rather than being imposed from above" (Braithwaite, 2004, p. 129). That is also why collective hope is more often associated with grassroots and non-governmental agencies (Lueck, 2007). Although it is uncertain whether radical changes will ultimately occur, the practice of collective hope mobilises responsible action to counteract the stagnating enforcement of public hope.

Because dominant institutions often nurture false hopes in the interests of powerful elites (even within democratic contexts), Braithwaite (2004) suggests that different institutions are needed to foster collective hope. These "institutions of collective hope" may create space for dreaming and accomplishing the extraordinary without feeling

hopeless about shaping our futures (Braithwaite, 2004). In this regard, I conceptualise the commons as an institution of collective hope that provides a platform for people to cope, hope, and act together.

Institutions broadly refer to interrelated rules, norms, and practices that guide social encounters towards valued goals (Braithwaite, 2004). Commons-based institutions refer to those in which a community self-organises and devises rules and standards to manage shared resources and cooperatively produce goods or take action to deal with contemporary large-scale challenges (e.g., climate change) (Bollier, 2014; Yoder et al., 2022). Beyond monetary profit and exchange value, the commons' approach prioritises the socio-ecological well-being of present and future generations at local and planetary scales, accounting for the interconnections amongst and within living, social and technological systems (Bollier & Helfrich, 2019).

The commons has been extensively studied from the perspective of small-scale collective institutions for the sustainable local management of shared natural resources — for instance, community forests and fisheries (Ostrom, 2009). More recent is the emergence of commons-based institutions with a simultaneous local and global orientation (Kostakis et al., 2023a). Enabled by Information and Communication Technologies (ICTs), these configurations allow the asynchronous cooperation between individuals, communities, and networks to manage, safeguard and produce a more comprehensive range of resources, goods and services (e.g., data, software, digital archives) (Hess, 2008; Kostakis et al., 2023a; Schismenos et al., 2020). Examples include networks for preserving indigenous seeds or initiatives developing open-source technology (Kostakis et al., 2023b; Mazé et al., 2021). Other studies explore the potential of commons-based institutions to address global challenges, such as climate change and biodiversity loss by enabling collective action where “neither voluntary incentives nor government regulations have been able to deliver effective solutions” (Yoder et al., 2022, p. 52).

There is no blueprint for how commons-based ventures should be created and operated (Bollier & Helfrich, 2019). However, the shared values of justice and ecological stability underpin the constantly appearing initiatives (Kostakis et al., 2023a). In this light, the concept of the commons can be viewed as a universal language not bound by universalist ideologies (Gibson-Graham 2002), which allows for diverse and context-specific ways of governing, producing and living to emerge (Bollier, 2014).

Based on the hypothesis that hope can lead to action and vice versa (Ojala, 2023), commons-based institutions can be seen as institutions that foster collective hope and collective action. Such institutions may help people collectively envision a more sustainable and just future, deal with challenges remaining unaddressed by established institutions, and simultaneously work towards alternative solutions. In the next section, I discuss the case of Tzoumakers, a grassroots commons-based initiative that develops technology for small-scale agriculture. I explain how the community works and its broader vision, and discuss its contribution to paving an alternative technological path.

## **Case-Study: Tzoumakers**

### **An overview**

Tzoumakers is a rural initiative dedicated to developing open-source technologies for small-scale agriculture. The initiative has been operating since 2018 in the remote mountainous region of Tzoumerka in Epirus, northwestern Greece, where the local population largely depends on small-scale and low-intensity agricultural activities. Tzoumakers comprises a diverse, self-organised community of farmers, engineers, designers, makers, and other skilled workers who aim to identify and address local needs, primarily related to agricultural production. The community shares a physical space, a makerspace, where members have access to resources and essential manufacturing equipment to produce technological artefacts. The community is also part of regional and international networks contributing to and being supported by a global ecosystem of knowledge exchange.

Tzoumakers was originally conceived by the P2P Lab research collective, also based in Epirus, Greece, and is the result of five action research projects coordinated by the collective. These projects explored how to achieve local autonomy, sustainability, and knowledge exchange employing a global pool of knowledge commons (Kostakis et al., 2023a). Additionally, the initiative served as a pilot application to test the emerging production configuration referred to as “design global, manufacture local” (Kostakis et al., 2018) or “cosmolocalism” investigating a

collaborative, inclusive and sustainable alternative to production (Schismenos et al., 2020).

Moreover, endeavours with similar goals inspired the creation of Tzoumakers. For example, members of the P2P Lab collective initially studied and established connections with the Farm Hack network in the United States and the L'Atelier Paysan organisation in France (Giotitsas, 2019; Kostakis et al., 2023a). As mentioned by Kostakis et al. (2023a), these endeavours embrace an open-source philosophy and recognise the commons as the unifying factor that fosters global connections among like-minded individuals and groups involved in agriculture and other production sectors.

The starting point for the creation of Tzoumakers was to support local farmers who face significant difficulties in finding appropriate and affordable tools for their needs, capacities or sustainability-related choices (Pantazis & Meyer, 2020), while exploring the potential of cosmological production. Nevertheless, Tzoumakers share a broader vision. That is the establishment of similar communities and makerspaces in both urban and rural areas to reconnect society and technology (Tzoumakers, 2024). Tzoumakers also contributes to the goals of cosmologicalism to raise awareness about the potential of post-capitalist futures premised upon the values and principles of the commons (Schismenos et al., 2020).

So far, Tzoumakers have developed various tools and machinery tailored to the specific needs of local farmers and farmers from other regions. Documentation of these technological solutions as Open-Source Hardware (OSH) (Hannig & Teich, 2021) is also underway. Simultaneously, the makerspace serves as a hub for locals to repair their equipment and access or borrow tools for everyday needs. Additionally, through various open educational and outreach events, Tzoumakers' impact has gone beyond developing technological solutions for farmers. In fact, the community action has contributed to establishing and reinforcing of Social and Solidarity Economy (SSE) enterprises, strengthening an emerging local/regional social economy ecosystem. Moreover, strategic partnerships between the Tzoumakers' community and similar initiatives, activists, experts and researchers have facilitated participation in local, national and international networks, fostering continuous interaction between scientific research and grassroots action towards change. Lastly, despite the remote location, Tzoumakers have attracted attention from media outlets, organisations and individuals alike, promoting both their efforts and the region, opening space for international academic tourism and invigorating the local economy.

Since September 2023, the initiative has entered a transition phase into the hands of the local community, following an extensive period of public deliberation that occurred both asynchronously and in person. The discussions involved local stakeholders (i.e., members of the Tzoumakers community, local residents, government officials, and representatives of cultural organisations) and members of the wider community. Through this process, pivotal decisions about the future of Tzoumakers emerged, integrating key components of two prospective proposals. The chronology of the deliberation process, the proposals and the outcomes are openly available online.



**Fig. 1:** Biomaterials workshop with researchers from the “Materiom” initiative.



**Fig. 2:** Snapshot from the public deliberation on the future of Tzoumakers.

### **Paving an alternative technological pathway**

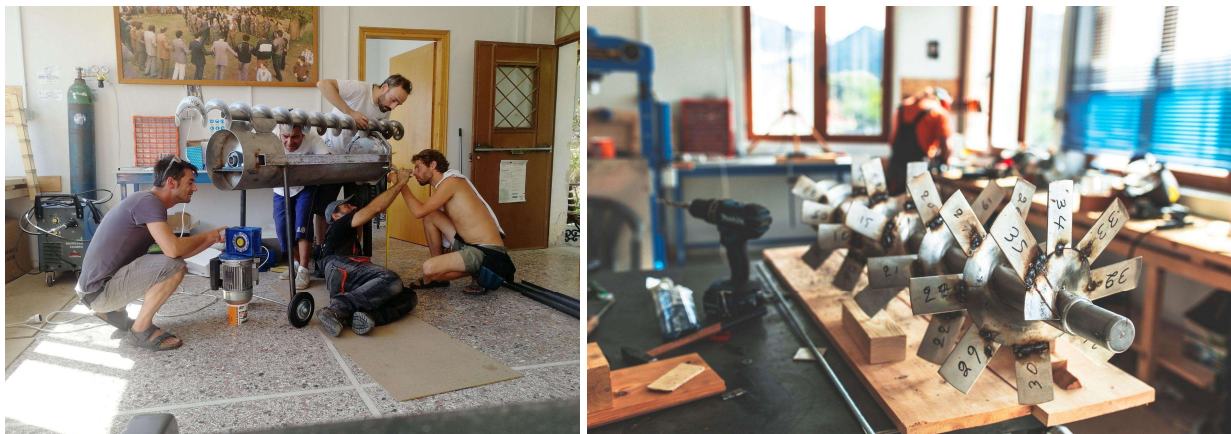
Various factors, encompassing both local and global challenges, motivated the creation of Tzoumakers to support local smallholder farmers. Namely, mainstream agricultural technologies available on the market are primarily designed for large-scale agribusiness and are, therefore, unsuitable for small-scale, mountainous, and organic farming (Giotitsas, 2019; Pantazis & Meyer, 2020). Additionally, local farmers encounter several obstacles in adopting new digital technologies, such as precision technologies, despite the fact that digitising production is touted as crucial for sustainable agriculture (Abdul-Majid et al., 2024; FAO, 2022; FAO & IPA, 2023). These obstacles include inadequate infrastructure, digital illiteracy, and insufficient funding, which prevent local farmers from reaping the benefits of digitisation (Trendov et al., 2019; Pantazis & Meyer, 2020). However, even those farmers who are able to adopt new technologies may face patent restrictions on modifying, repairing, and maintaining their equipment (Giotitsas, 2019). These farmers may also have limited control over the data they generate, which can be exploited for private profit without their full consent (Fraser, 2019).

Furthermore, as explained in section 2.1, strategies for technology adoption overlook the externalities associated with the entire life cycle of technology and ignore local specificities and the influence of powerful corporate

interests. Moreover, the current growth and innovation-oriented trajectory disregards farmers' inherited tacit knowledge about natural systems and appropriate tools/techniques for their locality and needs (Giotitsas, 2019). Due to their geographical and technological isolation, local farmers' problems, viewpoints, and accumulated expertise are often ignored. As a result, farmers remain marginalised from sustainability discussions and have little option but to comply with unsuitable technologies and approaches.

To counteract these challenges, a core objective of Tzoumakers is to empower the technological autonomy of local farmers. Technological autonomy emphasises access to appropriate equipment, infrastructure, knowledge, and skills. It also requires a critical understanding of the broader context that shapes agricultural technology and relevant policies, in order to participate in and contribute to crucial discussions and decisions.

To achieve their objectives, Tzoumakers follow the configuration of cosmological production. Cosmological production has a simultaneously local and global orientation and is based on the commons' philosophy and values of reciprocity and self-organisation (Ramos, 2017). Technology development within a cosmological context prioritises socio-ecological well-being over corporate profit, emphasising local sovereignty, cultural diversity, and the global common benefit (Schismenos et al., 2020). Furthermore, it aims for conviviality as a counterpoint to industrialism, highlighting the significance of social autonomy in the construction of technology (Kostakis & Tsiouris, 2024).



**Fig. 3:** Snapshots from the manufacturing process of a grinder for aromatic plants, utilising locally sourced scraps.

Firstly, the cosmological configuration combines local hardware manufacturing with global knowledge exchange (Ramos, 2017). Manufacturing occurs within a physical space, a makerspace, where community members can access manufacturing equipment such as 3D printers, CNC machines, and essential low-tech tools. Concurrently, the community can access resources (e.g., designs, bills of materials, manuals) available online as digital commons and use them to develop these artefacts and contribute their own solutions and adaptations. These digital commons are distributed under appropriate licences (e.g., Creative Commons) for downloading, using, modifying, monitoring, and improving. Secondly, the cosmological approach focuses on creatively adapting open-source technological solutions to local contexts. Adaptation considers specific biophysical conditions and aligns with value systems defined by the participants (Kostakis et al., 2018). Rather than promoting unilateral technological visions, the emphasis is on enriching the global digital commons with diverse solutions and good practices. Thirdly, the cosmological approach adopts the concept of “mid-tech” to achieve a balanced synthesis of high-tech and low-tech (Kostakis & Tsiouris, 2024). The mid-tech approach blends high-tech efficiency with the autonomy and resilience of low-tech alternatives, drawing on the benefits of both extremes (Kostakis et al., 2023b).

Cosmological production presents numerous environmental and social advantages. For example, it favours the use of locally available materials, reducing reliance on global supply chains, cutting transportation, and bolstering local and circular economies (Kostakis, 2019; Priovolou et al., 2022). Additionally, sharing infrastructure, using recycled materials, designing for durability, repair, and reuse rather than planned obsolescence, and tailoring production to

meet demand and necessity decrease costs and environmental impacts and support economies of scope over scale (Kostakis et al., 2018; 2023a). Communities benefit from or contribute to a global collaborative network with adaptable solutions (Kostakis et al., 2018). Each community member can share and enhance their knowledge and skills, inclusively considered in decision-making, design, and manufacturing processes. Moreover, the cosmological approach nurtures grassroots innovation and bridges the gap between traditional wisdom and high-tech, harnessing farmers' expertise (Giotitsas, 2019).

Despite the benefits of cosmological production, several difficulties and contradictions remain unresolved. For instance, the licensing and standardisation of open-hardware solutions is challenging and requires further institutional support and coordination among an international research and practice community (Costanza-Chock, 2020; Kostakis, 2019). Furthermore, cosmological production relies on energy and material-intensive infrastructures such as the Internet, contradicting the effort to alleviate pressure on natural resources and local populations (Kostakis et al. 2018). Moreover, as relevant studies from other makerspace environments show, there is a general ambiguity about how each community interprets sustainability and integrates it into their production methods and technology development (Berglund & Kohtala, 2020; Kostakis et al., 2018). Nonetheless, Tzoumakers, like similar initiatives, constitute a field of transdisciplinary observation and ongoing experimentation (Berglund & Kohtala, 2020) that is helpful in appropriating technology at the grassroots level and critically approaching sustainability in the context of technology.

### **The Potential of Commons-Based Technological Futures**

Informed by a grounded perspective anchored in the daily challenges of their locality, Tzoumakers begin with the acknowledgement that the current situation is unsustainable both locally and globally in the short and long term. As in many places across the country and around the world, factors such as the centralisation of governance, enclosure of the commons, and post-war modernisation have led to significant demographic shifts, a decline in the rural economy, and overarching changes in ways of living and societal norms. All this erodes community cohesion and disturbs ecological balance. The substitution of vernacular wisdom with expert knowledge, the imposition of alien technologies, and inadequate governmental policies further exacerbate these issues. The global multi-crisis is compounding these challenges, leaving these communities ill-equipped to confront them.

Looking straight into the troubled, inescapable present (Zaliwska & Boler, 2019), however, serves for Tzoumakers as a motive for action rather than a reason to passively accept prevailing narratives that no alternatives exist (or may exist). In this direction, Tzoumakers exemplify how society-led technology development can leverage the construction of different pathways premised on the organisation and ontology of the commons.

As a commons-based institution, Tzoumakers embody the core values of sustainability, equity, reciprocity, and justice in their operational ethos. Their organisation showcases inclusive decision-making processes and cooperative technology development, illustrating the potential of scaling wide by forming regional and global networks and partnerships with regular institutions. This approach illustrates how commons-based institutions may increase opportunities for adaptation and learning in an uncertain, changing world (Ostrom, 2009) through collaboration and open knowledge exchange. This attribute is also consistent with and complementary to the local community's legacy of adaptive ingenuity in dealing with complex environmental conditions and keeping pace with changing circumstances despite isolation from infrastructure and decision-making centres.

Drawing on their community's resilience in the face of adversity and neglect, the Tzoumakers' approach to technology development shifts attention away from the artificial dilemmas perpetuated by techno-optimist assumptions (high-tech versus low-tech, optimism versus pessimism, hope versus despair). Instead, they pivot from the rhetoric of high-tech as a panacea towards a deeper interrogation of technology and the ethical questions that precede it. Departing from the notion of a one-size-fits-all technology for growth-driven sustainability, Tzoumakers emphasise technological diversity, akin to biological and cultural diversity, as crucial for veering away from the current destructive trajectory (Hui, 2023). Technodiversity unfolds naturally within the cosmological context, fostering tailored solutions through inclusive practices, considering local specificities (natural, cultural, social), traditional wisdom, and the creative integration of high- and low-technology (mid-tech).

As a result, Tzoumakers' work reflects pivotal characteristics echoed in the interdisciplinary discourse on forging



alternative technological trajectories. This discourse prioritises conviviality and diversity and points towards the democratisation of technology and “pluriversal” futures. Namely, futures premised on more inclusive, diverse, non-Western perspectives on life, humanity and nature (Escobar et al., in press; Lawhon et al., 2023; Velasco-Herrejón et al., 2022). Within this discourse, approaches to technology from different fields and cultures meet under the umbrella of Critical Futures Studies, where attention is drawn to worldviews, values and ontologies that have been systematically ignored or suppressed by the dominant techno-scientific regime (Feukeu, 2024; Goode & Godhe, 2017; Ramos, 2003). Further, as highlighted by Kostakis et al. (2023a), Tzoumakers actively contribute to improving and consolidating a convivial technological framework epitomised by cosmopolitanism. Such a framework delves into the deeper complexities of technology (i.e. socio-environmental externalities, political and ontological aspects) and is essential for envisioning a post-growth society (Kostakis et al., 2023a).

Centring their efforts around technology while having a broader vision for sustainable futures, positions the initiative within a distinct category of social movements coined by Hess (2005) as technology- and product-oriented. These movements do not merely oppose the status quo by critiquing the shortcomings and questionable motives of top-down strategies, nor merely promote existing alternatives (Giotitsas, 2019). Instead, they take a step further by engaging in collective action to raise awareness of the current situation and produce technological alternatives (Giotitsas, 2019). In doing so, these movements can develop new design practices and bodies of knowledge that are not at the service of the industry, but are capable of transforming it (Hui, 2020), while looking towards more profound systemic changes.

The outcome of these endeavours is uncertain. As Feenberg (1999) suggests, the emancipatory potential of such grassroots movements could be perceived as simply reinforcing existing technological norms. Their work may impact current technical rationality, but their political objectives could be assimilated into existing structures without catalysing fundamental shifts (Feenberg, 1999; Giotitsas, 2019). Nevertheless, Tzoumakers, like similar initiatives, choose to confront future uncertainty by approaching the present situation as if it were “in a state of pregnancy” (Fromm, 1968/2010), refusing to passively accept the established trajectory. For Tzoumakers, uncertainty again seems to be a motive for action rather than a force of stagnation and blind acceptance of fraudulent hopes. Hope in the context of Tzoumakers relates to embracing this uncertainty while extending beyond mere optimism or hopelessness. Their motivation to act despite uncertain outcomes is bolstered by the confidence gained from a grounded, collaborative, step-by-step process.

Crucially, navigating uncertainty relies on trusting relationships, mutual support, and emotional exchange. The commons-based organisation and values offer the community opportunities, space and resources to discuss, share feelings and ideas, adapt, and innovate on their own terms and ethical considerations. As discussions about the future of Tzoumakers have revealed, a significant outcome of the initiative’s efforts has been the creation of social bonds, collaborations and friendships. These relationships are founded on principles of openness, solidarity, ecology, the democratisation of technology, and a common vision of shaping a desired future within the present “we” seek to transcend.

In light of these, considering the case of Tzoumakers as a commons-based institutions that may inspire the emergence of collective hope and action, allows for the intersection of the technology-related discourse with the emerging field of Possibilities Studies (Escobar, 2023; Glăveanu, 2023; Ross, 2023). That is because these institutions, as Braithwaite (2004) explains, provide a safe space for people to imagine and pursue desired futures, free from the blindfolds of authority (Fromm, 1968/2010) and the monocle of Western modernity.

Ultimately, the multidimensional activity of Tzoumakers expands widely on various scales and discourses on technological futures. This way, scholars from different fields, practitioners, citizens, and other stakeholders can engage in a transdisciplinary dialogue about technology and its fundamental role in sustainability. Such an exchange aims to debunk and move beyond empty techno-optimist promises. These promises denote false hopes for salvation, progress, development and power promoted by Western, capitalist, or other hegemonic forces, as documented in different geo-historical contexts (e.g., in cases of State socialist regimes) (Barca, 2020). The point of commons-based initiatives like Tzoumakers is to recuperate and build consciousness and sovereignty of technology from the grassroots. That is to empower people discern fraudulent hopes from actual possibilities, be able to estimate the impact of our actions (or inaction), and dare imagine alternative trajectories and engage in shaping them. The potential of making-with, thinking-with and coping-with that is put forward (Zaliwska & Boler, 2019) by the

commons-based institutions is vital for dealing with the present trouble and critically envisioning, hoping and acting together for a better, yet undetermined and unpredictable future.

## Conclusions

Techno-optimism, dogmatically promoting universal high-tech futures as the sole path forward, dominates mainstream sustainability discussions. However, such a myopic perspective neglects the broader implications of technology and its symbiotic ties to the capitalist-consumer economy. This narrow perspective pushed by dominant institutions to serve vested interests may be seen as a hegemonic form of public hope that stifles critical discourse and leads to social stagnation. The article argues for alternative technological pathways, highlighting the potential of developing technology based on the commons. In this direction, I use the illustrative case of Tzoumakers, a grassroots initiative based in rural Greece. Research on Tzoumakers has shown how the commons-based approach, exemplified by “cosmolocalism”, can provide an alternative framework for technology production and challenge the current trajectory fostering local and global collective action.

The paper advocates for commons-based institutions as sources of collective hope, although this conceptualisation requires further exploration. In this regard, stepping beyond the boundaries of this paper, future research can delve into how Tzoumakers’ collective action mirrors the context of hope connecting with broader studies on the topic (e.g., Haro, 2010) and with other communities of practice. A more comprehensive exploration of the role of hope could deepen our understanding of the political and social potential of hope within commons-based initiatives, encouraging interdisciplinary dialogue and the emergence of good practices towards society-led transformative changes.

Ultimately, commons-based institutions foster the flourishing of trusting relationships and cultivating collective ingenuity through knowledge exchange and experimentation. These institutions provide a platform for people to address present anxiety and future uncertainty. In essence, communities around commons-based institutions share a vision and the responsibility of cooperating for sustainable pluriversal futures for technology and beyond, entailing numerous potentialities waiting to take shape.

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