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In this issue

How to study technology when the nature of work changes

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When we study technology we need to tread the fine line between knowing what technologies we speak about but remain mindful of how we address technology in a social science setting. The decades old debate about how technology influences our work is tightly coupled with how we define the social and material context of our work. Today's knowledge workers rely on digital infrastructures every minute of their work except for probably their lunch break. Meetings are conducted online, computers generate and help edit text, calculate or visualize solutions, and internet protocols transmit anything from video to designs and price information.

We could easily be tempted to think about the digital around us as a thing, a more or less material set of objects that surround us during work: screens, keyboards, pads, phones, cables, signals. The decades old debate around the mutual influence of actions and structures we create, initially termed structuration by Anthony Giddens, has played into how technology can be studied and how humans interact with technology, in structured or network forms, where the idea of Actor Network Theory inspired social scientists. The more recent idea of sociomateriality has influenced our thinking about technology and what it is that we call social.

One of the latest incarnations of this line of thought issues from work by Paul Leonardi and others (Bailey et al., 2022; Leonardi, 2023) and rests on the idea that scholarship focuses on the relation between humans and between humans and non-human actors, such as technology, and that research observes technology in use and in practice surrounding immediate use and usefulness of technology. In Leonardi's words we need to ask how to organise for and think about the materialization of agency (Leonardi, 2023):

"By considering agency as a materialization, we can take a more expanded view. If agency materializes as action, it does so in ways that afford and constrain the very actions that help to materialize it. Thus, when we are talking about affordances, we are always also talking about the materialization of agency. Action knows no distinction among agencies because action is agency made manifest. Agency affords action and action creates agency." (Leonardi, 2023: xvi)

As action (or practice) becomes or remains central in our study of technology and work we may perceive a refreshing departure from a debate or even controversy about what is social and what is not but rather a recognition that some elements and social structures need to be understood or internalised by users (norms and rules for example, see Faulkner and Runde, 2013) and others emerge and are reproduced as enablers and constraints, much alike the old idea of structuration only with a more refined vocabulary for how we think about constraints and affordances and how we co-create reality in the moment of making use of technology.

While the refreshment might not last, my point is to take a step back and consider what the materialization of agency means at work and in context. We should still specify the type of gadget and infrastructure and specific material arrangements we use in space and time and we should zoom into the how and the when of work practices. Such an agenda could help us articulate with more precision how technology supports organizational life and business and how it constrains it. Understanding this interplay could hold a technology fixed, such as generative AI, or it could hold an organizational routine fixed, such as the performance of a specific function. What could be gained from this is fundamental: how do we arrange the human-machine interface so as to achieve a desirable outcome?

The context wherein the human-machine interface takes place or plays out is so varied and that each dimension or factor tends to define its own methodological and theoretical universe in social sciences (Avgerou, 2019). It's no surprise that dipping into contextual conditions and theories is daunting. However, at the same time the following inconclusive list is meant to quench a thirst for theoretical breadth when we observe technology in use and recognise that understanding the duality of technology (Orlikowski, 1992) is just the gate to be opened to a more granular, immediate, existential take on the interface that defines so many aspects of our professional lives.

Changes in work practices include distant and remote work and ties to organizations and employers that are always mediated through apps, screens, or prompts. Offices disappear and re-appear in new formats, mobile, temporary, scrambled. The suggestion is to look beyond the immediate interface between the worker and the screen or the keyboard and consider:

- Time. What was known before interacting with others through an app and what happened during the interaction? Where have they left off, how did the non-human agents react, and what has been learned?
- Space. How does the human worker fit into a space that is an office, a counter, a cockpit or a remote desk? What are the visual cues that accompany the technology in use? Does art play a role in the space that

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is an office? Does movement limit or accelerate the interaction between workers, agents?
- Stakeholders. Who are the new players involved, logged in, eavesdropping? Are regulators closer than ever before, streaming and analyzing transactions in real-time? Are lurkers influencing decisions? Are machines taking remote or subtle signs into account?
- Institutions. Do certain patterns of organizing the interface become common or mandatory? Do norms play into behaviour that seemed irrelevant before certain elements of infrastructure entered common usage?
- Level of analysis. Can we capture or understand collective action through the interface between humans and machines? Are communities and societies changing because novel technology interferes with democracy? Are individual actions at odds with collective action or more easily aligned?

Some of these puzzles may be easier to tackle than others and some theories can apply to multiple questions[2]. The exciting moment comes when theories collapse and new explanations emerge despite or against old ideas. The materialization of agency that allows us and constrains us in co-creating reality happens every day and in diverse settings. It is both easy to study and accessible and fraught with legal and organizational challenges. However, the opportunity to go after the minute, almost banal use of screens, prompts, pings opens the gates to co-creating not just the practice and outcome of work but ourselves as actively forming participants, employees, passengers, patients, hybrid agents.

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[2] A few of these themes appear as challenges and research perspectives for scholars who form the Research Group on Collaborative Spaces (RGCS), a welcoming and growing network of researchers who are passionate about contemporary ways of studying space, work, technology, and sustainability: https://rgcs-owee.org/.

Between Cypherpunks and Commons. Navigating Blockchain's ideology of social change

Paula Ungureanu[3]

As new technologies afford to do things that were previously thought to be beyond the grasp of mankind (e.g., flying, space travel, extensive manipulations of nature, complicated medical interventions) they acquire the select status of objects that transcend the everyday and may even become objects of intense emotions such as wonderment and worship (Pärna, 2010). Historian and technology critic David Noble describes technologies to which great hope is pinned and which are typically hailed as the means of overcoming the shortcomings of the human condition as "technologies of transcendence" (Noble, 1998). In their early days, the steam engine, the railroad and the telegraph were heralded as instruments that would conquer time and space, alleviate poverty, and elevate wellbeing (Alexander, 2003; Standage, 2005). The commoditization of personal computers in the mid-1980s, the introduction of Internet and the rise of the knowledge economy a decennium later, released new waves of such faith (Nisbet, 2017; Pärna, 2010). Today, emergent digital technologies—including artificial intelligence, virtual reality, and blockchain—command a similar fervor and collective expectation for radical social change (Bailey, Faraj, Hinds, Leonardi, & von Krogh, 2022; Benbya, Davenport, & Pachidi, 2020; Faraj, Pachidi, & Sayegh, 2018).

Blockchain, in particular, is hailed as one of the most powerful of these new technologies, often compared to the Internet in its potential to reshape economic, political, and social structures (Catalini & Gans, 2020; Davidson, De Filippi, & Potts, 2018; Felin & Lakhani, 2018). Its emergent applications have generated visions of a new world, powered by decentralized, peer-to-peer trust systems that bypass traditional intermediaries such as banks, states or private gatekeepers (Jacobetty & Orton-Johnson, 2022). By emphasizing cryptographic security, individual freedom, and a movement away from centralized authority, blockchain technology presents itself as a vehicle for profound systemic change (Catalini & Gans, 2020; Davidson et al., 2018; Notheisen, Hawlitschek, & Weinhardt, 2017).

However, blockchain is not an invention that emerged from pure technical ingenuity alone; it draws heavily on ideologies that have long questioned centralized power structures. While Satoshi Nakamoto's (2008) white paper introduced Bitcoin and its associated blockchain as fundamentally decentralizing technologies, his work built upon decades of ideological exploration, including the cypherpunk's rage against governmental surveillance, the libertarian ideals of individual autonomy, and even the early notions of an information commons where knowledge and code should be open and collectively managed.

As new technologies often attract utopian visions of social change, the question arises: how do these ideologies shape our expectations? While blockchain technology is often framed as a solution to the failures of institutions and social systems, it is essential to inquire how its embedded ideologies influence its transformation into a utopian, yet often polarizing, force within contemporary society. This essay seeks to explore the relationship between blockchain technology ideologies—specifically cyberlibertarian thought—and the concept of the commons. It simulates reflection on what exactly blockchain technology promises—and how these promises relate to historical and ongoing debates about the commons, shared resources, individual agency and collective governance.

Blockchain's cyberlibertarian ideology: from cypherpunks to crypto anarchism and beyond

Although blockchain entered the public arena in 2008 with Bitcoin, its ideological roots extend back to the late 1980s and the early 1990s, when a community of cryptography enthusiasts—known as cypherpunks—began exploring the potential of encryption for social and political change. These early advocates, largely drawn from mathematics, computer science, and cryptography, held that robust encryption was not merely a technical tool but a moral imperative to preserve individual freedom (Swartz, 2018). The movement was a reaction to growing concerns about surveillance and state control over digital communications and saw in cryptography an ideal tool to protect privacy and enable secure, anonymous digital interaction. Nick Szabo, a cryptographer and early blockchain theorist, explored how decentralized, self-executing agreements could enable a stateless, cyber-anarchist economy. Through his close relationship with the cryptographic community (sometimes called "crypto banks" or "cipher banks") and its informal leader Timothy C. May, the author of the famous "Crypto Anarchist Manifesto" (May, 1992), allowed Nick Szabo to lay the grounds for the original concept of crypto economy (Judmayer, Stifter, Krombholz, & Weippl, 2017). Szabo is credited for being the inventor of smart contracts—self-executing contracts written into code—which later became a core feature of blockchain technology(Szabo, 1996), and was the proponent of Bit Gold (Szabo, 2005), a decentralized digital currency that used computation to generate cryptographic puzzle solutions, much like Nakamoto's 2008 proposal of Bitcoin.

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A closely related movement was that of crypto anarchism, a political philosophy that, in its idealized form, recognizes no laws except those that can be described by math and enforced by code. Crypto anarchism takes cypherpunk principles a step further, advocating for the complete erosion of state authority in digital spaces. While cypherpunks focused on protecting privacy, crypto-anarchists sought to actively undermine state power by creating an alternative, stateless digital economy(Beltramini, 2021). As Duncan Frissell put it in a post to the Cypherpunk email list in 1996, they positioned blockchain in opposition to the current capitalist system, such that *"future market societies [would] no longer be in the hands of "The Authorities" but rather in the hands of those trading on the market; i.e. everyone on earth"* (Swartz, 2018: 267). Other key exponents of crypto-anarchism such as Timothy May (1992), John Perry Barlow (1996) and Julian Assange (2012) further championed these ideals envisioning a world where strong cryptography could dismantle state surveillance and coercion, allowing individuals to interact freely without government oversight. The cyber anarchists coined the term 'cyberspace' which they viewed as a realm of radical freedom, self-governance, and resistance to state and corporate control. While their perspectives varied, they shared a belief that digital technologies—particularly encryption, decentralized networks, and open-source systems—could be leveraged to create a borderless, autonomous space beyond traditional political and economic structures. In "A Declaration of the Independence of Cyberspace", Barlow (1996) famously declared cyberspace as independent from nation-states. He envisioned the internet as a new, self-regulating domain where individuals could interact without interference from governments that did not "possess sovereignty" over this digital world. For Barlow, cyberspace was a utopian space of pure speech and free association, where traditional hierarchies and laws were irrelevant, while for Assange, cyberspace was a tool to expose corruption and dismantle secrecy-based power structures. WikiLeaks embodied this belief: by leveraging cyberspace, it forced institutions into involuntary openness, weakening their control over information.

With the devastating surge of the 2008 Financial Crisis and the systemic loss of trust in governments, regulatory authorities and financial institutions, these ideas found their way into the mainstream, as Satoshi Nakamoto's cryptocurrency project, Bitcoin, gained massive recognition as the most famous blockchain application and one of the most radical revolutions after the world wide web (Davidson et al., 2018). Satoshi Nakamoto's (2008) Bitcoin whitepaper references many of the same cryptographic and decentralization principles that Szabo explored with Bit Gold, and that cyber-anarchists associated to the cyberspace. Since its unveiling, Bitcoin has intrigued with its ability to support currency on a global scale and coordinate exchanges in large communities of users without centralized control or infrastructure thanks to the decentralized and immutable technology called blockchain (Judmayer et al., 2017).

In synthesis, blockchain is a decentralized digital ledger that securely records transactions across a network of computers, ensuring data is transparent and tamper-proof. Each transaction is grouped into a "block," which is then linked to the previous one, forming a "chain" of blocks, hence the name "blockchain". This decentralized structure means that no single entity controls the data, and each participant in the network possess a copy of the entire blockchain. When a transaction occurs, it is validated by this diverse network using a consensus mechanism, and cryptographically secured and added to the chain, making it immutable and visible to all network participants (Beck, Stenum Czepluch, Lollike, & Malone, 2016; Buterin, 2014; Glaser, 2017; Nakamoto, 2008; Wood, 2014).

Blockchain technology promises to revolutionize the trust processes needed in all types of human exchanges, from physical goods to rights and information, thanks to its unique socio-technical affordances (Davidson et al., 2018; De Filippi, Mannan, & Reijers, 2020; Felin & Lakhani, 2018). Decentralization, at the heart of blockchain, refers to the distribution of control, authority, or decision-making across multiple nodes or participants, rather than relying on a single central authority (Glaser, 2017; Nakamoto, 2008; Notheisen et al., 2017). For instance, Bitcoin's decentralized network allows users to send and receive payments without relying on banks or other intermediaries, democratizing financial transactions and eliminating intermediary trust (Nakamoto, 2008). Smart contracts are another innovative aspect (Buterin, 2014). Platforms like Compound use smart contracts for automated lending and borrowing (Saengchote, 2023), while IBM's Food Trust platform uses them to track and verify food products, enhancing supply chain transparency and accountability from farm to fork (Casino, Dasaklis, & Patsakis, 2019; Kawaguchi, 2019). Blockchain's transparency feature ensures all transactions are publicly recorded and verifiable, fostering accountability while cryptographic techniques secure data and transactions, protecting against unauthorized access (Pilkington, 2016).

Given the affordances above, I refer to this ideology as "cyber-libertarianism" a broad term to describe both cypherpunks' and crypto-anarchists' shared a belief in the value of technology in maximizing individual freedom and minimizing government control. While originally

closely related to cryptocurrency applications, since 2016 the uses of blockchain have significantly expanded beyond cryptocurrencies and are rapidly evolving across multiple fields, mainly due to the introduction of smart contracts. Since smart contracts automate the execution of an agreement so that all participants can be immediately certain of the outcome, without the need to know, trust, coordinate with each other or rely on intermediaries, they open up the possibility of blockchain revolutions in a wide range of sectors (Davidson et al., 2018; Felin & Lakhani, 2018). Within the trend of high volatility and exponential growth of the last years, a particular attention in the venture landscape has been given to blockchain solutions which aim at solving some of the world's toughest challenges, from poverty and access to healthcare and education, to fair and sustainable consumption, all the way to climate change (Kewell, Adams, & Parry, 2017; Ungureanu & Cochis, 2023). In line with the crypto-libertarian foundations, using blockchain for good includes as many as banking the unbanked, providing alternative models of consumption, enhancing environmental sustainable practices, democratizing peer-to-peer exchanges of goods and services, peer-to-peer microfinancing solutions and new models of humanitarian aid (Ungureanu & Cochis, 2023).

It is also noteworthy that cyber-libertarianism is deeply embedded in other technology-centered ideology. Andrew Shapiro (1999) and Pärna (2010) discussed the long-standing myth of technology as a liberator, highlighting collective beliefs of the internet's quasi-magical power to overturn millennial dynamics of power and control, enabling individuals to transcend traditional constraints of gender, race, and class and thus giving them the opportunity to realize their true potential without inhibitions. A similar narrative emerges in "Cyberspace and the American Dream" (Dyson, 1996), which likens the Internet to a new frontier—a digital Wild West free from hierarchical constraints. Rooted in the American ethos of self-determination, this perspective frames cyberspace as a domain of unregulated enterprise and individual empowerment, heralding the decline of centralized bureaucracies in favor of decentralized, personalized governance.

Blockchain ideology in between cyberlibertarianism and commons

As these examples suggest, in place of the static perfection of a utopia, crypto libertarianism envisions an "extropia", an open, evolving society allowing individuals and voluntary groupings to form the institutions and social forms they prefer (Damour & Damour, 2024). I here suggest that this ideology draws close to a commons' perspective, while also including some revolutionizing principles and some contradictions.

While blockchain ideology is deeply rooted in the quest for individual autonomy and the decentralization of power, the concept of the commons offers an alternative vision that emphasizes shared resources and collective management. The commons perspective is grounded in the idea that certain resources—such as the environment, knowledge, and digital infrastructures—should be managed collectively by communities rather than privatized or controlled by state entities. This perspective upholds values like egalitarianism, community participation, and stewardship, contending that resource management is most effective when it is democratically governed and equitably distributed (Benkler & Nissenbaum, 2006; Gardner, Ostrom, & Walker, 1990; Ostrom, 1990).

Despite these differences, both blockchain ideology and the commons share a set of commonalities. While blockchain ideology is deeply rooted in the quest for individual autonomy and the decentralization of power, it also draws inspiration from earlier visions of the information commons. Early cypherpunk writings—such as those found in the Cypherpunk Manifesto—emphasized that information should be freely available and collectively managed, free from the control of centralized institutions. The following text written by mathematician and computer programmer Eric Hughes (1993) in the Cypherpunk Manifesto exemplifies the new idea of algorithmic expertise as a collective and decentralized means of social liberation empowered by information technology:

"Information does not just want to be free, it longs to be free. Information expands to fill the available storage space. Information is Rumor's younger, stronger cousin; Information is fleeter of foot, has more eyes, knows more, and understands less than Rumor. Cypherpunks write code. We know that someone has to write software to defend privacy, and since we can't get privacy unless we all do, we're going to write it. We publish our code so that our fellow Cypherpunks may practice and play with it. Our code is free for all to use, worldwide. We don't much care if you don't approve of the software we write. We know that software can't be destroyed and that a widely dispersed system can't be shut down."

As exemplified by Hughes' (1993) Cypherpunk Manifesto, cyber libertarianism, which heralds a world of minimal state intervention and maximal individual freedom, is not entirely opposed to the commons but rather reinterprets its principles through a technological lens. Blockchain technology, with its decentralized, trustless, and secure infrastructure, embodies this hybrid vision by enabling

both individual empowerment and the creation of shared, resilient networks.

In addition, cyber libertarianism and commons also share a critical stance toward centralized power and monopolistic control. As explained above, blockchain ideology disrupts established hierarchies by leveraging decentralized technologies and cryptographic trust to enable direct, peer-to-peer interactions that remove traditional intermediaries. This approach tends to favor market-oriented mechanisms aimed at empowering individuals and fostering self-sovereignty. By contrast, the commons framework emphasizes participatory governance and collective ownership, championing cooperative management, mutual aid, and social equity. Thus, while blockchain projects often pursue disruptive, technocratic strategies to reconfigure power structures, commons-based initiatives advocate for deliberative processes and community stewardship, highlighting a fundamental tension—and potential synergy—between individual empowerment and collective needs.

It is also noteworthy that blockchain proponents advocate for disrupting established financial and political systems by leveraging code as a form of governance, while commons theorists emphasize the organic evolution of communal norms and social practices, viewing shared stewardship as essential to sustainable resource management (Ostrom, 1990). This divergence highlights a tension between technocratic approaches to decentralization and the more democratic, deliberative models championed by the commons. Yet it is precisely this tension—and the potential for synergy—that offers a rich avenue for inquiry about their interplay: How might the cryptographic mechanisms of blockchain be reconciled with, or even integrated into, commons-based models of governance and resource management?

From utopia to dystopia, and the 'cyber-space' in between: Trust, crises, and the evolution of blockchain communities

Although cyber-libertarian ideals promote decentralization, blockchain communities often face crises that reveal its limitations, pushing them to confront the need for collective governance—a key concern of the commons. The vulnerabilities of blockchains such as selfish behavior, speculation, scams and frauds, hacker attacks, manipulation, and illegal trafficking, have been shown to have enormous costs in terms of social trust, slowing down blockchain's path to wide-scale adoption (Hawlitschek, Notheisen, & Teubner, 2018; Kietzmann & Archer-Brown, 2019). These tensions become particularly evident in moments of failure, where ideological commitments to immutability and self-regulation collide with the pragmatic need for intervention and shared responsibility.

A case in point is the 2016 DAO hack in the Ethereum ecosystem, the second largest ecosystem after Bitcoin, and one of the most vibrant blockchain communities (Mehar et al., 2019). Designed as a decentralized venture capital fund governed entirely by smart contracts, The DAO embodied the cyber-libertarian dream of code-based, trustless cooperation. However, when an exploit allowed an attacker to drain millions in Ethereum, the community faced an existential dilemma: adhere to the principle of immutability and accept the loss or intervene on the blockchain network to reverse the damage. In response to the generalized crisis that the incident had produced, some influential members of the community proposed to alter the Ethereum blockchain state by implementing a fork which would have nullified the hack by reversing the system to a moment before the hack (Shin, 2022). Those who supported the interventionist solution, known as 'pro-forkers,' clashed with 'no-forkers,' who opposed it. No-forkers viewed reversing the blockchain to undo an event as a breach of blockchain's immutability and a sign of vulnerability to centralization. Despite heated debates, the Ethereum community implemented a hard fork to reverse the attack. This resulted in a split, with pro-forkers upgrading the code and no-forkers sticking to the original protocol, forming an alternative ecosystem (Ungureanu, 2025). This event illustrates how, during crises, community members might prioritize immediate interests over the principles of blockchain potentially undermining the identity and cohesion of peer-to-peer communities, which are essential in both commons and the cyberlibertarian ideologies. It is thus interesting to notice how trust in blockchain idelogy can lead to community conflicts and changes to commons.

Beyond high-profile crises, everyday vulnerabilities—scams, speculative bubbles, and governance failures—continue to challenge the cyber-libertarian vision of blockchain as a self-regulating system. While libertarian-driven projects tend to resist external oversight, commons-based approaches emphasize collective stewardship, asserting that trust arises not only from cryptography but also from social cooperation. Recurrent phishing attacks at blockchains, for example, raise the question of accountability: should responsibility lie entirely with individuals, as cyber-libertarianism suggests, or should communities develop shared protective measures, as commons governance would propose?

In sum, the DAO hack serves as a striking illustration of the tensions between cyber-libertarian ideals and the practical challenges of maintaining decentralized systems. Cyber-libertarianism champions radical autonomy, trust

in code over institutions, and minimal interference, envisioning blockchain as a self-regulating ecosystem free from external control. Commons-based perspectives, in contrast, emphasize collective governance, mutual responsibility, and participatory decision-making. These conflicts reveal blockchain's dual nature, as both a vehicle for radical individualism and a 'cybersite' of emergent communal practices. While cyber-libertarians seek to minimize institutional control in favor of market-driven, self-organized systems, commons perspectives emphasize participatory governance and mutual accountability. When crises arise—whether through hacking, scams, or governance failures—these two ideological positions come into direct conflict, revealing the paradox of decentralization: the very mechanisms designed to eliminate centralized authority can, under pressure, recreate it in new forms. The evolution of blockchain communities, then, is shaped by this ongoing negotiation —between the desire for autonomy and the necessity of collective resilience. Whether blockchain ultimately fulfills its transformative potential depends on its ability to reconcile these competing logics rather than succumb to their contradictions.

This cycle—between utopian visions of self-regulation and dystopian fears of centralization—suggests that blockchain's ideological identity is not fixed but continuously reshaped by the pressures of governance and trust. Whether blockchain ultimately reinforces cyber-libertarian individualism or evolves into a model of decentralized commons will depend on how communities navigate these recurring tensions. This essay argued that understanding blockchain's potential for social change requires examining both its ideological foundations and its ability to foster new forms of collective action. A promising path is the study of the ritualized enactment of these ideologies, where new technologies do not merely reflect but actively shape social realities that are still taking form.

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Commoning by doing it yourself! Thoughts from the hackerspace and its passengers

Mickael Peiro[4]

In the 1990s, hackers began to think theoretically about developing hacking spaces to prove that they could be completely open about their work and ethics. The variety of names used by hacking communities reflects the diversity of the movement. While some groups and places that sound like hackerspaces don't want to be labeled as such because of the political resonance of the name, others proudly claim to be hackerspaces. The following lines are based on a doctoral journey and an ethnographic study of a hackerspace in France from 2016 to 2019. Far from being a place hidden from the world, the hackerspace brings together people who have decided to fight against technological accumulation and the hegemony of property, in a physical place that is visible and open to everyone. It is not meant to be a place for insiders, technophiles or only activists, but a place where everyone can meet and discuss issues freely and without constraints.

1. Draft Punk

In their struggle against proprietary technologies and standardized organizations, hackers have to walk the line between freedom and organization. But while they organize meetings to discuss the values and purpose of the space, at the same time - ... in the same place - ... these same hackers never stop 'doing'. They never stop replacing proprietary systems with free systems. They never stop setting up digital and electronic workshops to deconstruct technological complexity. They never stop giving beginner programming courses. They never stop teaching short-term travelers about astronomy, soap-making, and knot-tying. They never stop building online and physical libraries for as many people as possible. They never stop welcoming other alternative organizations and social movements. They never stop organizing conferences on the appropriation of techniques and technologies useful for the emancipation of all. They never stop opening their doors for meetings, demonstrations, presentations and friendly exchanges. They never stop offering a space for technological emancipation and digital survival.

Through 'doing', hackers continue and expand their struggle against property, managerialism, and technological hegemony, while relegating organization to last place. They see 'doing' as the sole purpose of the hackerspace. The governance spaces are not, and never have been, decision-making spaces, or even a particular moment where members with responsibilities within the space could meet to discuss future projects. Power, legitimacy and authority within the hackerspace have always been in the 'doing' and in all those who wish to embody it. Compared to corporate gatherings, meetings in hackerspaces have a very different ambition: to bring people together once again to discuss social issues freely, with the aim of promoting their emancipation. Unlike the other organizations it contests, the hackerspace does not divide the initiative into periods of reflection which would then lead to times for action, but maintains the existence of these spaces simultaneously, always giving decision-making power to those who do.

"There have always been a million theories about the content of the hackerspace. After that, everyone used it for what they needed, which is interesting, but doesn't make it a sustainable project. At the same time, it's interesting that the project wasn't completely written down from the start and that we didn't arrive with something, with rules to follow. It's important in terms of raising people's awareness that they themselves take part in the creation."

(Interview with a hacker).

The hackers' resistance to a dominant model is embodied in the creation of a site of experimentation that suggests a work in progress rather than a starting point or even a destination. The gathering of hackers is always complex to define the content and purpose of the place where hackers meet. It is the individuals who come to propose something that build the space. So, it's a space where individuals intertwine, for a moment or for a long time, to create something together. According to some members, there is a lack of usable equipment, lively workshops, pleasant premises, technical resources, and organization. The hackers experiment with technological and digital workshops as well as with organizational techniques. In addition, hackers construct a model that embodies their values and in which they would like to operate. It is this fabrication that could constitute the hackers' project. Not defined *a priori*, but constantly reloaded.

2. Host In The Shell

The place where hackers meet is very real, whilst the social transformation they are pursuing is at draft stage and the work still in progress. The hackerspace is having trouble sustaining its resources, and its activities still need to expand to reach more people and welcome more members. It could be that the purpose of the hackers is not just to challenge a dominant model, but to experiment with a different kind of space. While the members are sometimes torn between the desire to create a real place to develop projects and a technological support for social movements, they are not able to decide what ends the space should produce. They are also

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confused about the results for their members, for the civil society, for social movements and against the big digital companies.

The hackerspace thus achieves its most important results at the individual level. The members agree that the hackerspace is a proposal to others. The project is against the organizations monetize users' data, against the surveillance organized by companies and states, against the deprivation of users of their ability to appropriate technologies, but above all it is a place where 'doing' reigns. Hackers organize themselves to offer a place where people who want to participate in their emancipation can gather. The hackerspace is therefore a place created for citizens so that they themselves can contribute to their own emancipation. It's a place where kids come to learn the basics of coding, where teens come to 3D print replacement parts for their machines, and where adults come to modify their operating systems and encrypt their data. It's a place where people come to learn, but also to teach. Everyone can benefit from a shared space where all members of the hackerspace are involved collectively, even if they use the space individually.

"You only have to look at the people who turn up for the first time. You plug in three things, and they start an engine. You know they've done nothing, but for them, a world has opened up. It's certainly more interesting to do things while taking the piss and remaining open to everyone, than to start with a protest and then conform or not. That point is fatal. You have a situation where the framework is predefined, and the terms are already set. And you have another where you come in, you do cool things and I do cool things with you at the same time."

(Interview with a hacker).

The means that hackers use to promote the emancipation of citizens and to fight against dominant digital practices would become their ends. In the end, hackerspace residents, like the citizens who pass through its doors, never find a clear place (literally and metaphorically), be it against capitalism and private property, or for any form of freedom. What they do find is a place where they can study their own project and the shared space to understand how it works, modify and add to it, distribute it to other users and use it as they wish. This is how hackers think about commoning, by doing it themselves!

From emplacement to Virtuality: A sociomaterial Perspective on the Emotional Transformations in Coworking Spaces during COVID-19

Carlotta Cochis[5]

Introduction

Coworking spaces have prospered in recent years as hubs for creative and entrepreneurial activities, offering flexible workstations, shared resources, and a sense of community and mutual learning (Spinuzzi, 2012; Kojo & Nenonen, 2017). By bringing diverse workers together in physical proximity, these spaces aim to foster face-to-face interaction, serendipitous encounters, and collaborative dynamics that can spur innovation and personal growth (Garrett, Spreitzer, & Bacevice, 2017). Yet, the sudden onset of the COVID-19 pandemic disrupted this core model, compelling coworking spaces to reassess how they could maintain and nurture community ties when health restrictions and remote work practices became the norm.

As coworking spaces grappled with social distancing mandates, many turned to digital platforms to replicate - albeit imperfectly - the spontaneous exchanges and convivial atmosphere traditionally engendered onsite (Bouncken, Kraus, & Martínez-Pérez, 2020; Hu, 2020). This pivot raised questions about the sustainability of in-person–focused ecosystems and whether online collaboration could sustain the sense of identity and togetherness that underpins the coworking ethos. Early indications suggest that integrating virtual and onsite elements introduced new opportunities for broader participation and resource sharing. At the same time, some members voiced anxiety and frustration over the potential erosion of the physical and social qualities that many consider essential to coworking.

This study adopts a sociomaterial perspective (Orlikowski & Scott, 2008) to underscore how coworking practices emerge from the interplay of material artifacts, technological tools, and social interactions. However, unlike much of the sociomaterial literature, I also foreground the affective dimension as an essential catalyst of organizational change. The emotions such as anxiety, hope, or frustration do not merely accompany sociomaterial transformations; they actively shape how digital platforms, physical distancing measures, and communal identities are reconfigured under crisis conditions. By bringing emotions into the sociomaterial lens, this research extends the existing theory to illustrate how coworking communities negotiate new practices through both technological affordances and the shared emotional states that sustain or hinder adaptive processes. Drawing on a discourse analysis of social media posts before and during the COVID-19 crisis, this study investigates how emotions reflect and shape coworking communities' adaptive efforts. The findings reveal that while hope-driven narratives often fueled experimental hybrid practices and sustained member engagement, negative emotions such as isolation and uncertainty also surfaced, challenging the resilience of these spaces. By revealing how coworking members leveraged digital tools to enact or resist new modes of collaboration, this research highlights the significance of affective processes - ranging from optimism to fear - in mediating sociomaterial change (Nolen-Hoeksema & Morrow, 1991; Orlikowski & Scott, 2008).

In what follows, the paper situates coworking spaces within broader debates on collaborative work and sociomaterial practices, detailing how exogenous shocks like the pandemic can either propel or hinder organizational transformation (Christianson, Farkas, Sutcliffe, & Weick, 2009; Meyer, 1982). Accordingly, the central research question guiding this study is: *How do coworking spaces transform their sociomaterial practices under the exogenous shock of COVID-19, and how do social media discourses reveal the ways in which emotions mediate these transformations?*

The subsequent sections outline the methods used to examine online discourse and present a detailed account of how coworking communities negotiated these unprecedented circumstances. The discussion then reflects on the broader theoretical and practical implications of these adaptive responses, offering new insights into how collaborative space can preserve core values of community and innovation even under the constraints of physical distancing.

Theoretical background

Coworking Spaces: A Theoretical Perspective on Their Evolution and Challenges

Collaborative spaces, particularly coworking spaces (CSs), have gained prominence in organization studies for their potential to spark creativity, knowledge exchange, and entrepreneurial synergy (Kojo & Nenonen, 2017; Spinuzzi, 2012). Such spaces are often theorized as sites of "economies of encounters," wherein physical proximity and unplanned interactions actively shape how work is done, ideas are generated, and professional networks are established (Garrett, Spreitzer, & Bacevice, 2017). Initially celebrated for providing cost efficiencies and community anchoring, CSs also align with broader sociomaterial perspectives that foreground how material and technological elements jointly influence organizational practices (Leonardi, 2012; Orlikowski & Scott, 2008).

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However, scholars have begun to question whether these benefits, rooted in coworking's tangible, face-to-face dynamic, remain robust when confronted with emerging digital platforms or the constraints imposed by exogenous shocks (Hu, 2020).

In particular, debates center on whether digital modes of collaboration can sustain the spontaneity and serendipity that many view as fundamental to coworking (Hofeditz, Mirbabaie, & Stieglitz, 2020). Although online tools promise flexibility and broader participation, they may also dilute the sense of place-based community that gives coworking its unique character. This tension has become more pronounced since the COVID-19 pandemic, which has compelled organizations of all kinds to adapt suddenly, blending onsite and remote work practices at an unprecedented scale (Christianson, Farkas, Sutcliffe, & Weick, 2009). For CSs, this crisis has magnified questions about how emotional and motivational factors, such as hope, anxiety, or resilience, mediate the uptake of new sociomaterial arrangements (Nolen-Hoeksema & Morrow, 1991; Ashkanasy, Humphrey, & Huy, 2017).

Accordingly, the contemporary theoretical conversation extends beyond whether CS merely "works" in a digital environment toward interrogating how exogenous shocks accelerate the hybridization of physical and virtual domains. This perspective illuminates both opportunities for expanded community participation and potential losses in relational proximity and communal identity (Meyer, 1982; Spinuzzi, 2012). By foregrounding the interplay of technology, space, and emotion, this study positions CSs as critical testbeds for understanding how organizations integrate onsite and virtual practices and how these integrations, in turn, reshape the meanings of collaboration, innovation, and collective engagement.

CSs have grown rapidly in recent years, incentivized by interests in cost reduction, the attractiveness of new ways of working, work-life balance, efficiency, sustainability, and regional development incentives (e.g., Kojo & Nenonen, 2017; Spinuzzi, 2012). The expansion of new emerging technologies plays a significant role as they afford workers to work in any physical location, as long as they have the necessary electronic devices (Kojo & Nenonen, 2017). However, while working from home certainly prefigures as a cheaper alternative, it also brings along the threat of isolation from both social and business contexts (e.g., Kjaerulff, 2017). The emergent CSs literature shows that CS constitutes an 'antidote' to the alienation of smart working and focuses on the social dimension in CSs whereby freelancers can build a space-centric network from which a sense of community arises (e.g., Garrett, Spreitzer, & Bacevice, 2017) and with which coworkers can identify (Capdevila, 2013; Cochis et al., 2021). Independent workers are looking for spaces that bring new stimuli for creativity and innovation and foster new social relations. On the one hand, they also offer an everyday routine that can make them feel like they are part of an organized work environment and a professional support community (e.g., Butcher, 2018). Drawing on a sociomaterial prospective (Leonardi, 2012; Orlikowski & Scott, 2008), some recent CS studies have highlighted the importance of sociomaterial practices whereby the physical space transforms to answer "the need to facilitate inspiration and serendipity by open interaction and collaboration," (Bouncken, Kraus, & Martínez-Pérez, 2020, p. 120; Ungureanu et al., 2018). At the same time, other researchers have argued that the sociomaterial practices typical of CS are not necessarily confined to knowledge sharing in the social proximity of physical space but can also be supported by complementary virtual coworking platforms which "enable participants, who are not always able to physically interact with others, to be a part of the community and to benefit from the advantages such as knowledge and motivation exchange." (Hofeditz, Mirbabaie, & Stieglitz, 2020, p. 10).

Despite these qualities, tensions arise when the features originally intended to counteract the alienation of virtual work, such as a tangible sense of community, relational proximity, and serendipitous exchanges, are increasingly invoked to support remote or digitally mediated activities. Merging situated and virtual practices may extend the coworking revolution into new terrain, yet it also risks reconstituting forms of isolation wherein individuals effectively work "alone, together," despite nominally shared communities (Cook, 2020; Spinuzzi, 2012). When this interplay is further accelerated by an exogenous shock such as COVID-19, the stakes become more pronounced as operators and members alike must quickly integrate new sociomaterial arrangements without compromising the trust and spontaneity that define coworking's communal ethos. These dynamics point to a significant gap in understanding how collaborative spaces negotiate such hybridization processes under crisis conditions, underscoring the need for deeper investigation into how coworking models adapt when physical and virtual forms of engagement converge.

COVID-19 pandemic and collaborative spaces: Exogenous shock, emotional mediation, sociomaterial change

Starting in December 2019, a new coronavirus (COVID-19) (Wang, Horby, Hayden, & Gao, 2020) has affected the whole world, causing a global pandemic, leading several national governments to apply blocking restrictions to reduce the infection rate (Bonaccorsi et al., 2020). Due to the constraints imposed by the pandemic, many workers started working remotely, but for others,

doing remote work was virtually impossible, and many were forced to become inactive or find new jobs (Bick & Blandin, 2020). The social distancing measures can negatively affect workers' lives; this is often the case for creative and digital workers, many of whom are regular users of coworking spaces (Hu, 2020). I argue that the outbreak of the pandemic and the correlated lockdown represent an exogenous shock for the CS industry (i.e., unexpected changes triggered by the external environment) (Spinuzzi, 2012). Collaborative spaces had to implement change practices, accelerating the transition to a virtual offering, trying to keep intact the sociomaterial practices and discourses associated with the physical space. In addition, they had to respond promptly to the exogenous shock, providing new answers to the coworkers' entrepreneurial needs (Hu, 2020; Corvello, Verteramo, & Giglio, 2023; Corvello et al., 2024). In this study, I am concerned with the impact of the COVID-19 exogenous shock on the sociomaterial discursive practices regarding collaborative spaces, and in particular on the process of hybridization of place-centric and virtual work practices.

The literature on the effects of exogenous shocks has shown on the one hand the negative consequences that abrupt change can have on some organizations, but on the other, has also highlighted opportunities in terms of learning, motivation, identity and collaboration processes for individuals, teams, organizations (Christianson, Farkas, Sutcliffe, & Weick, 2009; Meyer, 1982). Importantly, it has been suggested that exogenous shocks affect individuals' lives through emotional processes such as fear, uncertainty, despair, anxiety, hope, energy or determination, pushing them to embrace change with energy, motivation or resolution which were once unknown (Nolen-Hoeksema & Morrow, 1991). For these reasons, I propose that emotions may play a fundamental role in triggering change in the sociomaterial practices of CS facing the COVID-19 restrictions and inquire about how emotions triggered by the exogenous shock may lead and sustain change in the sociomaterial practices of CSs.

Even in normal times, CSs are intended as emotional experiences designed to stimulate user innovation and creativity. Space itself is designed to stimulate positive emotions and encourage the coworker's embeddedness with the space-centric community, for instance, through openness and serendipity (e.g., Amir, 2020; Waters-Lynch & Duff, 2019). Organizational studies have explored the antecedent and mediating role of emotions and socio-emotional processes in creative and innovative processes (e.g., Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Seligman, 2012). For instance, Sweetman et al. (2011) show how the generation of creative ideas depends on psychological resources such as hope and optimism, just as emotions can become barriers in entrepreneurial change processes, creating rigidities and acting negatively on entrepreneurs' motivation or initiatives (Doern & Goss, 2013). Since emotions can be both antecedents and mediators of creative processes, it is essential to recognize their role in the processes taking place in CS regularly and even more in the presence of an exogenous shock, which may generate further emotional loads. In such conditions, coworkers may either spill further energy and emotions into their environment, augmenting the attachment to work for places and communities, or manifest a lack of interest, rigidity, and disinvestment in the coworking model (Ashkanasy, Humphrey, & Huy, 2017).

Data and Methods

Twitter as a window on social opinions

To understand how communities related to CSs responded to the COVID-19 disruption, I collected data through Twitter (from 2023 called X) social media, which represents highly interactive platforms through which individuals and communities share, co-create, and discuss (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011) every day. Its users leave billions of digital traces regarding their social interactions, opinions, emotions, and thoughts, providing the opportunity to collect massive observational data. Twitter messages convey moods and feelings belonging to the authors, whether the intention is to share information or talk about selves (Bollen, Mao, & Pepe, 2011). I thus analyzed the discourse of CSs' actors through Twitter microblogging to capture emotions related to the COVID-19 disruption and discourses about change practices involving CSs, affording a better understanding of the role of emotions in the change processes. For this research project, 99,745 Twitter messages were collected using a scraping technique between 1 September 2019 and 31 August 2020.

Period	*Number of Tweets*
September 2019	9,538
October 2019	9,522
November 2019	8,794
December 2019	7,048
January 2020	9,551
February 2020	9,542
March 2020	9,605
April 2020	6,209
May 2020	7,100
June 2020	7,388
July 2020	7,605
August 2020	7,843
Total	**99,745**

Table 1. Total Tweets Collected Distribution per Month

To study changes caused by an exogenous shock, it is necessary to distinguish at least between a pre - and

during-crisis. To this purpose, I have analyzed tweets containing specific keywords and hashtags - such as coronavirus, covid, stayhome, quarantine, lockdown, staysafe, socialdistancing, coronaviruspandemic, stayathome, and wfh (an acronym for "working from home"). The resulting data revealed a limited presence of relevant tweets before the COVID-19 pandemic, specifically between September 2019 and February 2020. Upon closer analysis, this early occurrence was primarily associated with the hashtag #wfh, which, while unrelated to the pandemic at the time, referred to the concept of working from home. In contrast, a marked increase in the volume of tweets containing the identified keywords was observed from March 2020 onwards. This significant uptick aligns with the onset of the global health crisis and the implementation of widespread lockdowns and social distancing measures. To account for these trends, two distinct sub-datasets were created: the first includes tweets published between September 2019 and February 2020, representing the pre-crisis period, while the second encompasses tweets published from March to August 2020, corresponding to the during-crisis period.

Time	*Period*	*Relevant Tweet*
Pre-crisis	Sep 2019 - Feb 2020	100
During crisis	Mar 2020 - Aug 2020	7,008

Table 2. Relevant Tweets by Time Period

As shown in Table 2, the pre-crisis period is characterized by a relatively small volume of relevant tweets, totaling 100. By contrast, the crisis period reflects a sharp increase, totaling 7008 tweets. This distinction underscores the significant role of the COVID-19 pandemic in amplifying the online discourse surrounding CSs, as individuals increasingly engaged in conversations related to remote work, lockdown measures, and social distancing during this time.

Topic Model algorithm

To analyze the data collected, I use LDA. The algorithm focuses on co-occurrent words inside documents and treats documents as a random set of latent topics, where each topic is itself a word distribution (Blei, Ng, & Jordan, 2003). Generating topics starting from probabilistic models has three benefits. First, researchers must not impose dictionaries and interpretative rules on data. Secondly, this method recognizes important themes that humans cannot discern. Finally, it allows for polysemy because the topics are not mutually exclusive; the single words appear in the topics with different probabilities, and the topics can overlap or group (DiMaggio, Nag, & Blei, 2013). The output of the LDA model includes a topic-word matrix (reports the word weights in each topic) and a topic-document matrix (reports the topic weights in each document) (Hannigan et al., 2019). These distributions can be used to identify models and patterns for the study. To determine the optimal number of topics, I employed the coherence score method, which is widely used to assess the interpretability and consistency of topic models. This analysis allowed us to identify 16 topics for the Pre-Crisis dataset and 14 topics for the During-Crisis dataset, balancing the need for thematic granularity with semantic clarity to ensure meaningful and manageable outputs.

Following the procedure outlined Croidieu and Kim (2018), I adopted a systematic approach to refine and interpret the topics. Initially, two independent researchers reviewed a sample of tweets associated with each topic, focusing on the most probable words and their contextual use to uncover coherent thematic patterns. To consolidate the emerging themes, I applied selective coding to a subset of representative tweets, which allowed us to identify core semantic constructs and recurring patterns. This step was critical to ensuring that the labels assigned to the topics captured the essence of the data while maintaining consistency with existing theoretical perspectives.

The labeling process involved iterative refinement through researchers' discussions and comparison with relevant literature on collaborative spaces and sociomaterial practices. This collaborative effort ensured that each topic label reflected both the probabilistic outputs of the model and the substantive insights emerging from the data. I performed an early-stage analysis of the labeled topics, focusing on identifying key patterns and shifts between the Pre-Crisis and During-Crisis periods. This step provided a deeper understanding of how the COVID-19 crisis impacted the coworking community's discursive practices and emotional narratives. This methodological approach allowed us to construct a robust theoretical artifact that captures the evolving themes and dynamics within the datasets.

Results

Table 3 and Table 4 show the topic-word matrices from the topic modeling algorithm LDA and the label coding.

Topic	*Key words*	*First order labels*	*Second Order Labels*	*Third order labels*
3	startup, provid, benefit, flexibl, space, innov, product, mani, support, workplac	Flex-place and Flex-work offered	Services Offered	Work practices
4	wework, market, industri, compani, year, oper, plan, trend, leas, growth	Entrepreneurs Business Centre	Business Development	Work practices

5	open, locat, cowork, citi, real, hous, founder, center	Physical space location	Services Offered	Work practices
10	meet, book, room, desk, workspac, visit, tour, membership, avail, access	Coworking services	Services Offered	Work practices
12	offic, space, offer, call, privat, servic, flexibl, info, rent, suit	Coworking services	Services Offered	Work practices
14	space, cowork, find, perfect, move, social, weve, market, job, london	Perfect synergy in the coworking job market	Business Development	Work practices
1	cowork, space, share, talk, find, top, women, tech, develop, creativ	Female digital community	Digital Community	Social practices
2	member, team, learn, hub, share, manag, experi, excit, futur, amaz	Exciting for knowledge-sharing community	Space-driven Community	Social practices
6	cowork, space, design, launch, project, brand, beauti, club, hotel, build	Inspiring the community through design	Space-driven Community	Social practices
7	busi, amp, great, startup, network, entrepreneur, make, collabor, connect, grow	Great social and entrepreneurial collaboration	Space-driven Community	Social practices
8	cowork, check, read, list, show, articl, play, readi, latest, post	Click here to enter our community	Digital Community	Social practices
9	workplace, peopl, home, palace, creativ, world, chang, environ, life, togeth	Creative synergy: matching opportunities to individual needs	Space-driven Community	Social practices
13	cowork, space, commun, remot, event, part, worker, live, nomad, studio	Social digital community	Digital Community	Social practices
15	join, week, event, tomorrow, pm, Friday, host, day, st, free	Event planning	Space-driven Community	Social practices
11	time, coffe, im, good, thing, feel, shop, lot, friend, tri	Positive emotions for space community	Positive Emotions	Emotions
16	cowork, love, happi, space, area, realli, welcom, everyon, full, made	Positive emotions for space community	Positive Emotions	Emotions

Table 3: Pre-Crisis Period Topics, highlighting key words related to emotions.

Topic	*Key words (most frequent)*	*First order labels*	*Second order labels*	*Third order labels*
1	space, cowork, find, provid, live, rent, creativ, citi, benefit, hub	Positive gains from coworking	Services Offered	Work practices
3	offic, space, cowork, call, offer, privat, month, amp, start, suit	Coworkers are missing their CS's benefits	Services Offered	Work practices
6	cowork, share, space, support, local, talk, manag, post, top, plaas	Enthusiastic support for coworker businesses	Business Development	Work practices
7	compani, flexibl, wework, futur, pandem, industri, market, coronavir, oper, solut	Business response to the crisis	Business Development	Work practices
13	meet, room, coffe, desk, hour, miss, enjoy, shop, session, morn	Coworkers are missing their CS's benefits	Services Offered	Work practices
2	open, place, space, social, cowork, close, safe, stay, member, founder	Crisis perception of space-driven community model	Space-driven Community	Social practices
5	join, virtual, free, week, event, onlin, check, discuss, sign, tomorrow	Anticipation for the onsite community going virtual	Space-driven Community	Social practices
9	back, im, cowork, good, realli, hous, welcom, everyon, news, ive	Welcoming positivity for returning to the space	Space-driven Community	Social practices
10	busi, commun, amp, peopl, connect, world, grow, great, network, collabor	Exciting synergy in the online community	Digital Community	Social practices
11	work, home, remot, peopl, mani, chang, feel, environ, worker, product	Adapting work to context needs (virtualization)	Space-driven Community	Social practices
12	cowork, learn, thing, startup, creat, togeth, design, tech, ashievl, innov	Virtual innovation and creativity	Digital Community	Social practices
14	cowork, space, read, locat, build, check, team, membership, interest, articl	Concerns for the future of the onsite community	Space-driven Community	Social practices
4	cowork, time, make, love, space, great, move, import, set, friend	Positive emotions for coworking life transition	Positive Emotions	Emotions
8	cowork, member, workspac, busi, book, happi, servic, visit, play, tour	Positive emotions for returning in the space	Positive Emotions	Emotions
11	time, coffe, im, good, thing, feel, shop, lot, friend, tri	Positive emotions for space community	Positive Emotions	Emotions
16	cowork, love, happi, space, area, realli, welcom, everyon, full, made	Positive emotions for space community	Positive Emotions	Emotions

Table 4 During-Crisis Period Topics, highlighting key words related to emotions

The matrices show the evolutionary adaptation of CSs in response to the exogenous shock caused by the COVID-19 emergency. Two discourses regarding the impact of the crisis are central in the model: discourse regarding changes in work arrangements and discourses regarding changes in social practices.

Discourse concerning the change in work practices develops through two different areas: the services offered -i.e., the resources made available by the CS before and after the shock, and business development ideas -i.e., visions, ideas, initiatives to promote and encourage new entrepreneurial activities. In terms of offered services, CS actors strive to find a virtual dimension that combines the characteristics they experienced in the physical space

with new experiences that can be fostered in the online environment, for instance, support for technical problems related to the use of the most popular digital platforms or creation of customized digital platforms. Business development ideas further bring to the debate forum the role of virtual meetings, webinars, and courses to support businesses in times of crisis.

Discourses about change in social practices are nested in two different facets of the concept of CS community: the digital community and the space-driven community. The most significant evidence related to social change practices is the shift toward practices of online community-making. Such practices concern crafting larger and more inclusive virtual communities in which members seek new adaptive solutions to the dual need of keeping distance to stay safe and maintaining status and participation in a dematerialized, ever-widening, and universally valid coworking space.

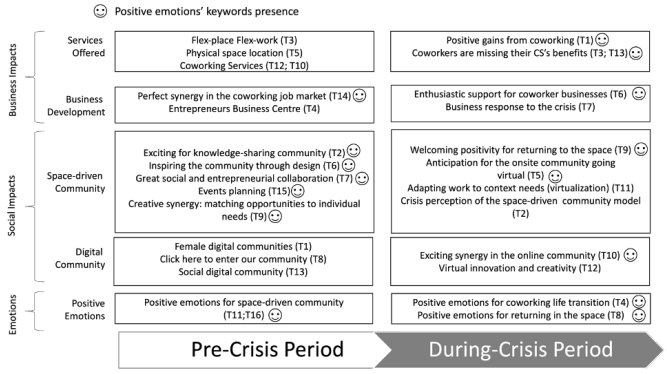

Figure 1 Model

The model (Figure 1) provides a detailed comparative analysis of the topics and practices that characterized collaborative spaces in the pre-crisis and during-crisis periods. Each component of the model offers insights into how CSs adapted their work practices and social dynamics to navigate the pandemic-induced challenges.

Work practices in collaborative space

Work practices refer to the organizational strategies and operational activities that define how tasks are structured, executed, and supported within collaborative spaces (CSs). These practices encompass the range of services offered by CSs and the initiatives aimed at fostering business development.

In the pre-crisis period, services offered by CSs were heavily focused on enabling flexible work arrangements (e.g., Flex-place Flex-work, T3), the availability of physical coworking spaces, and supplementary services such as technical support onsite. These services emphasized the importance of physical presence and direct interaction among members. For example, many CSs organized on-site workshops and technical training sessions to assist members with professional development. They also offered dedicated desks, meeting rooms, and event spaces, facilitating in-person networking and collaboration (i.e, Coworking Services, T12; T10).

During the crisis, there was a notable shift toward virtual service offerings. CSs adapted by providing digital solutions to recreate the collaborative experience online. Examples included offering technical assistance for navigating widely used platforms like Zoom or Microsoft Teams, developing custom digital tools for member collaboration, and transforming previously in-person events into virtual webinars and networking sessions (e.g., Positive gains from coworking, T1). These adaptations ensured that members continued to benefit from community support and professional resources despite the physical limitations imposed by the pandemic.

Social practices in collaborative spaces

Social practices in CSs represent these environments' cultural and community-driven dimensions, focusing on how individuals connect, interact, and create shared experiences. These practices are grounded in two key aspects: the space-driven community and the digital community. Before the pandemic, the space-driven community was the cornerstone of CSs. Members engaged in spontaneous and structured interactions, fostering a sense of belonging and facilitating knowledge exchange. Examples include informal discussions during coffee breaks, collaborative brainstorming sessions, and in-person networking events, all of which rely on the physical proximity of members to create vibrant and dynamic communities (e.g., Exciting for knowledge-sharing community, T2); Great social and entrepreneurial collaboration, T7).

The pandemic, however, brought significant disruption to these physical interactions, necessitating a shift toward virtual solutions. To sustain the space-driven community spirit, CSs adopted hybrid approaches. Virtual events, such as online workshops and digital networking sessions, were introduced to replicate the collaborative atmosphere. Additionally, where feasible, limited in-person interactions were maintained with strict safety protocols, such as reduced capacity and social distancing measures, ensuring that members could still engage in meaningful connections.

The digital community, initially a secondary component, gained prominence during the crisis. Before the pandemic, digital platforms in CSs were primarily used as complementary tools for onsite activities, such as sharing event details or maintaining professional networks. With

the onset of the pandemic, these platforms became central to the survival and growth of CSs. Members increasingly relied on online forums, virtual collaboration tools, and social media to maintain connections and share knowledge. This shift enabled the creation of broader and more inclusive virtual communities, breaking geographical barriers and allowing members from different locations to participate in discussions and projects. For instance, some CSs hosted international webinars or created online groups for peer-to-peer support, which expanded the reach and accessibility of their community-building efforts (e.g., Anticipation for the onsite community going virtual, T5; Adapting work to context needs (virtualization), T11).

The evolution of social practices highlights the adaptability of CSs in preserving their core values of connection and collaboration, even in a dematerialized context. By transitioning from primarily physical interactions to hybrid and fully digital models, these spaces demonstrated resilience and a commitment to sustaining community dynamics during unprecedented times.

Shifts in Emotional Dynamics

The model also highlights significant shifts in the emotional tone associated with the practices observed in collaborative spaces. An important visual cue in the model is the presence of smile icons next to specific topics, which denote keywords tied to positive emotions in the associated tweets. These keywords, such as "happi," "love," "great," and "welcom," capture the optimistic and supportive tone expressed by users in the pre-crisis and during-crisis periods. For example, in the pre-crisis period, positive emotions were strongly associated with topics such as "flex-place" and "flex-work," reflecting enthusiasm for the flexibility and community provided by coworking spaces.

During the crisis, the presence of smile icons next to topics such as "online community broad functioning" and "virtual innovation and creativity" indicates a shift toward hope-driven emotions. Users frequently expressed optimism about the adaptability of coworking spaces, praising efforts to maintain connection and collaboration through virtual platforms. These emotions not only highlight the perceived value of coworking spaces but also underscore their role in fostering resilience and innovation during challenging times. By incorporating these cues, the analysis provides a richer understanding of how emotional engagement influenced both work and social practices in collaborative spaces. Positive emotions, which were a dominant feature in both the pre-crisis and during-crisis periods, evolved in their orientation. In the pre-crisis phase, these emotions were predominantly enthusiasm-driven, as members expressed excitement and energy about the vibrant onsite activities and opportunities for collaboration within coworking spaces (e.g., Positive emotions for space-driven community, T11;T16). For example, Twitter posts often highlighted the joy of engaging in dynamic brainstorming sessions or the satisfaction of building professional networks in a lively and supportive environment.

During the crisis, positive emotions transitioned to being more hope-driven. Members expressed optimism about the innovative strategies adopted by coworking spaces to navigate the challenges of the pandemic. For instance, users celebrated the successful adaptation of physical events into virtual formats, such as online workshops and networking sessions, which allowed them to remain connected despite physical distancing measures. Similarly, hope was reflected in messages appreciating the resilience of these spaces in continuing to provide value through digital tools and hybrid collaboration models.

This shift underscores the role of emotional engagement in sustaining both work and social practices during a period of uncertainty. While negative emotions such as frustration and anxiety were also evident, particularly in posts lamenting the loss of physical interactions or highlighting challenges in remote work, the predominance of hope-driven narratives illustrates the capacity of collaborative spaces to inspire confidence and adaptability among their members (e.g., Positive emotions for coworking life transition, T4). The interplay between these affective responses and the adaptive measures taken by coworking spaces highlights the critical importance of fostering emotional resilience to maintain community dynamics and collaborative effectiveness in times of crisis.

Discussion

Literature Contribution

This study advances the literature on collaborative spaces by illuminating how coworking communities respond to exogenous shocks through sociomaterial reconfigurations and emotional processes. Previous work on coworking has primarily focused on the function of physical proximity, arguing that interpersonal encounters and the sense of community are key drivers for innovation and individual well-being (Kojo & Nenonen, 2017; Spinuzzi, 2012; Ungureanu et al., 2021). The study extend these contributions by showing how members and operators navigate the tension between onsite interaction and virtual collaboration when forced to adopt social distancing measures. In doing so, I elaborate on sociomaterial perspectives (Leonardi, 2012; Orlikowski & Scott, 2008) to emphasize that the affordances of physical

space are not merely transposed online but reconfigured by crisis management's emotional and pragmatic imperatives. This attention to emotional dynamics enriches the existing knowledge on coworking culture, which has often highlighted positive affect (Bouncken, Kraus, & Martínez-Pérez, 2020; Waters-Lynch & Duff, 2019), by stressing the role of fear, hope, anxiety, and optimism as key enablers or inhibitors of organizational change (Nolen-Hoeksema & Morrow, 1991; Ashkanasy, Humphrey, & Huy, 2017). Thus, these findings spotlight how the sociomaterial entanglement of technological affordances, physical environments, and emotional states configures coworking experiences when face-to-face contact is disrupted. Building on Orlikowski and Scott's (2008) assertion that materiality and sociality co-constitute organizational practices, the data show that emotional responses, ranging from hope and enthusiasm to frustration and anxiety, can become powerful forces shaping whether and how digital platforms are embraced. In other words, the place is not merely replaced by its virtual counterpart; rather, it is reassembled through an affect-laden process in which technology is experienced as an extension or partial stand-in for the physical site. This realignment of sociomaterial elements can either support or undermine the sense of community: on the one hand, optimistic emotional undercurrents may drive the creative use of platforms such as Zoom or Slack; on the other, fear or confusion can impede the adoption of new routines, reifying the loss of serendipity and belonging. By integrating emotions into a sociomaterial lens, I reveal how coworking members do not simply replicate onsite behaviors online; instead, they renegotiate shared practices by weaving in or withholding their emotional engagement. As a result, place-virtual hybrids emerge not purely as functional responses to distancing measures but as emotionally charged spaces where collective resilience or anxiety can accumulate. This expands prior research by demonstrating that emotional climates are integral to sociomaterial redesign and by showing that, in the face of exogenous shocks, the success of hybrid work arrangements depends as much on how people feel about these new configurations as on the tools themselves (Leonardi, 2012; Ashkanasy, Humphrey, & Huy, 2017).

Moreover, the study contributes to research on exogenous shocks by demonstrating how the sudden and global nature of the COVID-19 pandemic propels coworking spaces to realign their practices and discourses (Christianson, Farkas, Sutcliffe, & Weick, 2009). Although prior investigations have explored the effect of unanticipated events on organizations (Meyer, 1982), the findings draw specific attention to the process by which coworking participants harness digital platforms to maintain community ties. In so doing, I respond to calls for a deeper understanding of whether the distinctive traits of coworking, such as serendipitous social encounters and relational proximity, can persist when intermediated by online platforms (Hofeditz, Mirbabaie, & Stieglitz, 2020; Cook, 2020). The study thus highlights how hybrid models, blending spatial and digital practices, may not only preserve but also enrich community interactions by allowing broader participation, expanding creative exchanges, and ultimately fortifying members' sense of shared identity.

Practical Contribution

The results underline the importance of agile responses to exogenous shocks and offer practical insights for coworking managers seeking to sustain their communities under conditions of uncertainty. While earlier studies suggested that flexible work arrangements and resource sharing were key to coworking's value proposition (Capdevila, 2013; Kjaerulff, 2017), this study shows how these strategies can be extended to the virtual realm. Managers can design digital infrastructures that replicate, as closely as possible, the spontaneity and informality of face-to-face interactions, thereby fostering a sense of collective engagement. In parallel, they can institute strict health and safety protocols for onsite activities, ensuring that the physical dimension retains its unique capacity to spark creativity and trust (Garrett, Spreitzer, & Bacevice, 2017). By balancing virtual and onsite offerings, coworking operators can help mitigate the negative emotions associated with isolation and fear while channeling the hope and optimism that sustain members' resilience and entrepreneurial spirit (Sweetman et al., 2011). This hybrid approach, although born from necessity, may evolve into a long-term strategy, as it broadens participation and enables diverse forms of collaboration that transcend geographical constraints (Butcher, 2018).

Future Research

The findings open multiple avenues for future research. One promising direction involves comparative studies of coworking spaces across different cultural and institutional contexts, to ascertain whether the patterns of hybridization observed here generalize or are shaped by local norms and regulations (Hu, 2020). Longitudinal approaches could track changes in user satisfaction, innovation outputs, and sense of community over an extended period, thereby providing richer insights into the durability of virtual and hybrid arrangements once the exogenous shock subsides. Additionally, investigating individual-level emotional trajectories in response to uncertainty—from anxiety and stress to renewed motivation, would yield further evidence on how social and psychological factors interact to drive organizational adaptation (Doern & Goss, 2013). Finally, a deeper exploration of how digital platforms alter relational dynamics in coworking communities would be fruitful,

especially as technologies enabling immersive remote interaction, such as virtual or augmented reality, become more prevalent.

The study is subject to several limitations. By concentrating on Twitter discussions, the analysis relies on self-reported, publicly visible sentiments that may not fully capture the nuances or the depth of emotional states within coworking communities. This data source privileges individuals and organizations who are active on social media, leading to a possible selection bias that underrepresents those who participate less frequently online. Moreover, while topic modeling is useful for handling large-scale datasets and detecting broad thematic patterns (Blei, Ng, & Jordan, 2003; DiMaggio, Nag, & Blei, 2013), it may oversimplify linguistic context and the meanings behind user-generated content, particularly when emotionally charged exchanges occur. A mixed-methods approach, integrating interviews or ethnographic observations with social media analysis, could generate richer insights into the experiential and affective dimensions of coworking. Lastly, the temporal boundaries of the data collection captured only the early months of COVID-19 and may not fully reflect the longer-term transformations of coworking ecosystems, an issue that future studies could address with an extended timeframe.

Conclusion

This study demonstrates how coworking spaces - originally conceived as places of vibrant face-to-face interaction - reacted to a sudden and disruptive exogenous shock. By focusing on the emotional tenor of online discourse, the findings show that coworking communities collectively recalibrated their practices and identity in the face of pandemic-related constraints. Far from merely transferring onsite routines into digital venues, coworking actors harnessed the affordances of virtual platforms to preserve, and sometimes extend, core values such as shared identity, creativity, and knowledge exchange. Emotions played a decisive role in this adaptive process. Enthusiasm, which characterized pre-crisis engagement, evolved into hope that motivated resilience and innovation. Negative emotions such as frustration and anxiety, while present, did not overwhelm the larger narrative of solidarity and problem-solving, attesting to the capacity of coworking communities to withstand adversity and maintain collaborative ties.

In bridging situated and virtual practices, coworking spaces revealed new possibilities for blending physical infrastructure with online connectivity. This blended model allowed them not only to sustain their activities amid a prolonged crisis but also to lay the groundwork for potentially more inclusive and resourceful communities. In doing so, coworking spaces also exposed how emotional dynamics both influence and are shaped by sociomaterial shifts, suggesting a deeper interdependence between the affective realm and organizational adaptation. Such insights enrich the literature on collaborative spaces and exogenous shocks, showing that crisis contexts may stimulate organizational learning, broaden participation, and potentially reshape future directions for coworking business models.

As restrictions recede and new working modes continue to evolve, the permanence of hybrid coworking solutions remains an open question. However, the capacity to balance onsite sociability with digital fluidity appears poised to redefine notions of proximity and community. This study underscores how, in times of uncertainty, emotional engagement, and sociomaterial reconfigurations can become catalysts for organizational resilience. By recognizing the centrality of such factors, practitioners and scholars can better understand the opportunities and challenges at the intersection of physical space, digital platforms, and human affect.

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Silencing Capitalism?[6]

François-Xavier de Vaujany[7]

It is a crazy dream. A professional fantasy[8]. On a beautiful winter's morning, after a walk against a backdrop of icy blue skies, I reach the large Edgard Faure amphitheater at Dauphine. Here, two hundred students await the start of a new teaching based on an hour of shared silence!

A few days before, I explained the rules of the game. No laptops, no smartphones, no headphones, nothing to hold and nothing to do. No talking or trying to communicate. Sitting side by side, in the discomfort of immobility, each and every one must cohabit with his or her neighbors in this large, voiceless and aimless assembly.

At first, the discomfort is obvious. An hour of inactivity is a long time. Very long. Interminable. There are a few embarrassed laughs. Hands go off in search of that absent object usually so convenient to escape. Some sigh. Many are as bothered by the presence of the silent others as by the silence itself. For me too, stuck at the bottom of the amphitheater slope, everything is awkward. Stares watch for my reactions or avoid me. Sitting behind this desk, facing an unused microphone, I am a train at a standstill. Of all the people present that day, I am probably the most uncomfortable. Caught in the light, dispossessed of the verb, I am an authority laid bare.

Speech is often a mediation. But its suspension also shows the extent to which it serves to furnish and veil the world. We talk to avoid each other. To make background noise. Our expression is full of ready-made phrases, staged situations and commonplaces. In the silence, the curtain rises. We enter that "pre-reflexive" world so dear to phenomenologists. We touch on what lies beneath and before language. All living things are on the edge.

Twenty minutes into the session, some close their eyes. Others keep them wide open, to savour the strange atmosphere, or simply to be vigilant. Two people start crying, one in the middle of the auditorium, the other at the back. Everyone realizes something far beyond words. But what is it? It remains a mystery. Their mystery. For still others, the moment just becomes unbearable. They stand up, silently, to leave this painful experience as quickly as possible. In this solitude together, perhaps they felt they were in bad company. For the majority, boredom, impatience and numbness dominate.

Just a few more minutes. On the last few meters of this adventure, I finally wonder what is suspending the silence in this too-dark space. A system, perhaps? Capitalism has remained at the door of this educational space. Its organization and management are entirely interrupted. New things must be chained together, systematized like irresistible successions. Waiting must become a torment. Over time, management has gone from an obsession with functions to an absolute determination to ensure the fluidity of our increasingly "customer experience". Ford took over from Taylor. Platforms and AI have systematized the assembly line far beyond the shop floor. The fluidity of responses to our hands on the screen is the flip side of the cadences imposed by the conveyor belt.

You are watching a video on YouTube. Advertisements temporarily interrupt your viewing experience. Want to avoid them? No problem. You can upgrade from a "freemium" to a "premium" subscription, and you no longer suffer these interruptions. But removing this interval has a value. There is a price to pay. More broadly speaking, our screens have accustomed us to a continuous, flowing experience. New items follow one another so fluidly that they touch. Our digital browsing is a never-ending experience, as close to our desires as possible, guided by the very impulses of our fingers. Nothing can beat this space of attention. Especially not a university education with its necessarily dull rhythms.

Class ends. I get up and start walking towards the exit. But some of the students don't leave the lecture hall. They remain seated, prolonging the strange atmosphere of this learning without content. Instinctively, I climb a few steps and take a seat in one of the bays. I wait. Time no longer matters. I don't leave until the last square leaves this purposeless place.

Still reeling from the moment, I head for home. As I emerge from the metro station, my cell phone vibrates in my pocket. I realize I haven't touched it all the way home. The department manager wants to talk to me. "It's interesting what you've just done. I've got nothing against it. But imagine if everyone started doing that!". I'd never thought about the question of "scaling up". She's right. I reassure her. By the next class, everything will be back to normal. And I don't think this episode will cause much of a stir.

The next morning, I am at my desk for office hour. The Edgard Faure amphitheater is already far away. Everyday life has returned to normal. The director of my laboratory walks down the corridor. The door is ajar. She slips in for a brief chat. "It's not just your research that's weird! Are

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[6] Extract of *Organologia* (issue XXX), a series of blog posts about the philosophies and history of organizational science. Reproduced with permission of the author.

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[8] Possible philosophical sources of inspiration for this dream can be found in Mazis (2016), de Vaujany (2022), de Vaujany and Introna (2023), or Pérezts et al. (2024).

your classes getting weird too? She's right. Perhaps it's all a bit too far from the mark. I try, more or less skillfully, to drown the fish by going back to a story about offices and moving...

Evidently, news of this experience has begun to circulate.

I go downstairs for a coffee. In the stairwell, I bump into our president. On seeing me, he stops dead in his tracks. "Are you serving us empty sets? He's heard about the course. He's also worried about the possibility of things getting out of hand. I reassure him.

Back at my computer, the conversation makes me brood. As I sip my cold coffee, I wonder if I've experimented too much. I don't go out for lunch. No longer in the mood. The following events don't appease me.

The afternoon is devoted to a team seminar. In her introduction, the moderator stresses the importance of exploring the political consequences of management. I couldn't agree more. However, part of the speech seems directly addressed to me: "But revolt certainly doesn't mean silence. On the contrary, silence often has to be broken". That's a good point. I hadn't anticipated this possible ambiguity in my approach. In the reflexive world, silences are bound to make sense. They can be the invisibilization of a tragedy.

The seminar over, I return to my office. The routine of e-mails and writing refocuses me. For a few hours, I'm back in my ordinary life. I've lost track of time.

Already 6.30pm! Time to leave. As I'm moving towards the door, my telephone rings. I look at the number. I hesitate a little, then pick it up. It's the President's office. The director tells me that the rector wants to speak to me! He's on the line. I wait, stunned.

"Hello, you've gone far!

He comes back to the story he's obviously heard about. I nod obediently, incredulous.

"This is not the best time to be pushing this kind of experiment! More than ever, academics are expected to be exemplary and efficient."

I pause. What can I say?

"You know we talked about you this morning at the château?"

"You mean, the..."

"Yes, him!"

I'm speechless.

"He clearly told the Minister that the academic world had to remain a place where people could speak out, and speak out effectively. It's out of the question to pay professors to say nothing, and encourage them to do nothing!"

Clearly, my approach has not helped to improve the image of academics and researchers. I apologize profusely. The unpleasant conversation ends after a few minutes.

Haggard, I wonder what the next step will be. A mention in an angry tweet from Elon Musk? A spike in a papal homily? A demonstration by a citizens' collective? The headlines on the evening news? I'm running out the door as fast as I can.

How could I have been so wrong? For me, the emptiness of management was far more problematic than the fullness of silence. For me, the university had to be the temple of rebellious speech, but also of silence. Not just in libraries. But also that of serene dialogue. The silence of reflection and sometimes solitary writing. The silence of embodied doubt. The punctuation of discourse. Without silences, rhythms and pauses, no meaning is possible. In a world of constant noise, this withdrawal, this non-immediate discourse of the academic, is essential. This possibility of not reacting immediately to the flow of current events is precisely the place for deep reflection. Or so I thought.

I was wrong.

The following week, I published my *mea culpa* on social networks. I was "overworked" and "tired". This excess will never happen again. I agreed to do a "compensation" course with the same audience. The teaching will be based on an in-depth PowerPoint, a well-paced, well-thought-out teaching sequence, and multiple online supplements. Phew! Everything's back on track. Things are finally winding down.

Fortunately, this daring moment is just a dream. As of Monday, I'll be able to resume my part in the great symphony of the world.

PS: while the roles and functions mentioned in this post are real, the people embodying them are totally imaginary. They are the product of free writing and a desire for a Kafkaesque atmosphere.

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