RGCS

Research Group on Collaborative Spaces

JOCO

BY THE RESEARCH GROUP ON COLLABORATIVE SPACES

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In this issue

From Collaborative Spaces to New Modes of Organizing: Society, Democracy and Commons on the Way to Novelty

François-Xavier de Vaujany, Stefan Haefliger and Paula Ungureanu[1]

The adventure of the Research Group on Collaborative Spaces (RGCS) started as a working group in 2014. Gathering researchers from Paris, London and Montreal, it aimed at exploring and understanding further collaborative spaces and their relationships through multiple dimensions (work, innovation, management, knowledge, urban geography, competitive advantage, mobility, etc.). People from different fields (e.g., management, organization studies, sociology of work, urban sociology, economic geography, philosophy, anthropology…) joined what was and still is a very exciting discussion. As "spaces and places whose facilities, aesthetics codes, temporalities, enacted values, atmospheres, and spatial configurations are aimed at fostering horizontal collaborations" (de Vaujany et al., 2018: 102), "collaborative spaces"[2] pervade urban landscapes and more and more, our countryside. Coworking spaces, makerspaces, Fablabs, hackerspaces and labs in general, both internal or external (independent) embody and condense the search for open collaborations and horizontality[3] which has been for a long time at the heart our societies and their 'management'.

As the recent pandemic slows down and its events become less totalizing of our collective life, the 'collaborative spaces' phenomenon reaffirms its importance in our experience. Remote work, mobilities, reconfiguration of urban landscapes, steady increase in real estate prices, quests for new ways of living, generalization of open strategies and innovative processes, the search for meaning at work, the consciousness of climate change and anthropocentrism, are claiming more than ever attention to collaborative places, spaces and temporalities. Attention to transitional, open and fluid elements of life and work is needed more than ever to understand how our activities are turning into a huge Lego work continuously re-assembled in space and place with the help of digital platforms and digital tools.

Perhaps one of the most pressing issues of the post-pandemic world is understanding how we have changed, and what has remained the same. What have we noticed after making return to the collective work life after the pandemic? Are cubicles back? The windowless, claustrophobic office desks that keep workers separate make way for the open, attractive, and more inspiring "premier corporate real estate" that joins the war for talent in professional services. But HR strategy is only a small part of the picture. Knowledge creation has always relied on knowledge sharing in complex ways that include human-to-human exchange and learning (Nonaka and von Krogh, 2009) and outside the innovation debate we tend to forget that services are always co-created. Collaboration represents the core of the knowledge economy and any service that involves more than a mere transaction requires collaboration. We are returning to spaces that are collaborative else we can stay at home. This is true for businesses, public governance as it is for education. Contacts can be maintained online but new leads and new trust is built in person: between superiors and new hires, between colleagues, and between learning partners. The law firm, the multinational organization and the university alike are transforming and transitioning towards spaces that allow trust building and learning acceleration. Pre-pandemic, we may have envisioned work to be more collaborative than it was, less secretive, separate, distrusting. However, post-pandemic we imagine much more than just openness at work. The very fabric of space we live in changes: We may not want to go to work and nobody will force us. We may no longer want to commute unless it is for something valuable, enriching, enlightening. When do collaborative spaces enrich our lives? Where do we want to spend many hours, meetings, encounters?

The collective work of RGCS participants and the larger academics' and practitioners' community interested in collaborative spaces insistently suggest that our research objects are much more than a 'surface' plugged somewhere. They are 'practices' and 'processes'. Indeed, many of us noticed that those communities that lived collaborative spaces as mere surfaces and anchored their business models in such a logic (i.e., divide and rent), died during the pandemic. The very strategic value of coworking spaces, makerspaces, hackerspaces and labs was (and still is) their activities: the events, practices and processes for which they come to be perceived as unique in the world (de Vaujany et al, 2018; Merkel, 2019; Yacoub and Haefliger, 2021). It means that their environment,

[1] In the order of appearance: Université Paris Dauphine-PSL - Bayes Business School - Università degli Studi di Modena e Reggio Emilia

[2] Since the beginning, our network has "purposefully not included "workplace" in this definition (i.e., collaborative workplace") because of the increasing integration of both work/home practices and emotions (Bauman, 2013; Bohas et al, 2018)".

[3] Of course, this quest for horizontality and the apparent flatness of many contemporary organizations as been quickly criticized by the organization studies literature, and social scientists in general.

connectivity, events, atmosphere overflowing from the neighbourhood, the life of their members away from the place or in other places (even the party in their apartments or the meetings in the bistros around the corner), played a huge role in collaborative life. And openness itself appeared as much more than a change from a state to another: it was a complex, fragile, both playful and serious process (Haefliger, Von Krogh and Spaeth, 2008; Orel and Almeida, 2019; de Vaujany and Heimstädt, 2022).

This leads us to another pressing issue of our post-pandemic life: Have we become any better at breaking boundaries and barriers? Can we say that being forcedly divided has increased our will of sticking together even through the hardest times? Have loneliness and fear rejuvenated our desire for collaboration? Managing the encounter with 'the other' is always a challenging experience (Skovgaard-Smith et al., 2020). And challenges increase with perceived differences (Ungureanu and Bertolotti, 2022;). From such standpoint, collaborative spaces are the materialization of boundary work: tangible experiences at the crossroads between different professions, social generations, organizational cultures, work attitudes, life values. Getting different types of entrepreneurs, entrepreneurs and employees, academics and practitioners, to collaborate at the boundaries of their worlds requires a continuous process of reflection on the differences between self and other (Ungureanu and Bertolotti, 2022), as well as engaged work of mediation, brokerage and curation (Merkel, 2015; Carton and Ungureanu, 2018; Fabbri and Charue-Duboc, 2016). What exactly, if any, is thus changing in the relationships occasioned by collaborative spaces? We know that processes that enable exchange and collaboration are supported by technology but also by our cognition. We are growing up in a world of collaboration, and we are growing into collaborators. No longer is the internet the frontier of our imagination, fluid networks are becoming the norm and as we take further steps in decentralization, we are accessing multiple levels of contact, sharing, exchange, co-imagination. Yet, as surfaced by the recent geopolitical events and the threats of an incoming economic recession, the divide from 'the other' is as present in our collective conscience as it has ever been, bringing about also conflict, resistance and exclusion. It is also noteworthy that in the era of digitalization 'otherness' refers to encounters between the human and the nonhuman world, and manifests through and within their interactions (Callon, 1986; Latour, 2007). For instance, recent studies are bringing evidence of how machines are joining our teams, provide feedback and act as more than tools (Beane and Orlikowski, 2015; Shrestha et al., 2019; Sergeeva et al., 2020). While many study the progress of technology and innovations in machine learning and AI few focus on how humans learn to cope and grow, how we organise the subtle processes and encounters that enable getting along with machines, collaborating with and through machines. One of the most pressing questions of the recent time is what are the wider societal implications when we are learning from machines, being matched by machines, recruited by machines, and managed by machines? (See discussions by Kellogg and Valentine, 2021; Bailey et al., 2022). Platforms, new videoconference tools, avatars, metaverse, all the digitality we experience or hear about also echo and articulate this question.

In the way to the study and experimentation of collaborative spaces, our community (and probably our society as a whole) made a move from an emplaced, localized, surfaced view of our phenomenon to a more practice-based and processual approach. Beyond collaborative spaces, new modes of organizing work and more generally, lives, was and is at stake. But the opening of our research object also opened a different scientific and political space in which this journal (JOCO) is nested. These new modes of organizing, in particular all those searching more horizontality and openness, keep transforming societies, the way we live together and very process of togetherness.

The distinction between self and other, just as that between theory and practice, the human and the nonhuman, too often becomes a mind-body ontological distinction (Ungureanu & Bertolotti, 2020). In dichotomizing, we forget, as Schatzki and colleagues (2001) put it, that our bodies are our vehicles, and the self experiences and actively engages places *by way of the body*. Thus, collaborative spaces become means by which we connect cognitions and experiences of the body, and ultimately, re-elaborate the relation with 'the other'. To understand how the human is expanded, enriched, threatened or supplanted by the nonhuman, or to learn about how that which we study as theory finds a manifestation in the bodily world of practice, we need to inquire about the interstitial spaces in which we enact the trials and errors of collaboration between the human and the non-human, or between theory and practice.

In addition to the relation between cognition and technology, phenomenological and processual views of collaborative spaces cannot ignore the generative role of emotions. In the post pandemic world, the old cubicle at work saved us from many interactions we did not want to face. However, openness is challenging because it can be emotionally overwhelming or even frustrating, as we need to grow up to work with others that may think faster, connect faster, change faster. "What on paper is a set of dictated exchanges under certainty, on the ground is lived

out in suspense and uncertainty" (Taylor, 1995, p. 177 in Shotter and Tsoukas, 2011). Studying the emotional tensions enabled by collaborative spaces can thus play an important role in understanding some of the most pressing issues of otherness and togetherness of our times. Theorizations about emotions related to commons' processes in time of crisis can help us push the conversation further. On the one hand, democracy, ways of deciding together and legitimating collective decisions for a common good, is radically changed by what is at the end a hyper-individualization of our societies. From such standpoint, we are obviously more and more "alone together" (Coleman, 2009; Spinuzzi, 2012). The pandemic has strengthened but also more simply made this issue visible and sensible. Collaborative techniques (and collaborative spaces sometimes) foster inter-individual collaborations much more than commons. On the other hand, it has been suggested that resilience may become a core concern when a commons logic emerges among social actors who generally perceive themselves as separate such that they view their fates interconnected with a disruptive event and perceive their own behaviour as contributing to the common problem (Ansari et al. 2013). Studying collaborative spaces as *the bodily manifestation of commons' emotions* in a post-pandemic world can thus provide a new lens for our network, and for all those interested in more nuanced understandings of commons and collaborative spaces.

Beyond simply acknowledging a necessity for openness, we want (with JOCO) to draw the implications of the societal, political, anthropological and ecological problems linked to new ways of organizing. If our first collective works stressed the presence of emplaced, spaced 'collaborative spaces', we want to explore further the process of temporalizing, spacing, emplacing, mattering of the phenomenon. **We want to explore further the very happening and becoming of working, making and more generally, new modes of organizing** (see Touskas and Chia, 2002). Through that, we want to develop also further a politics of work and new modes of organizing. Work has always been seen as political and deeply linked to democratic issues (de Vaujany, 2016; Turner, 2018; Hirvonen and Breen, 2020). **But beyond this observation, new ways of living and their interwoven activities, their semantic which more and more goes beyond any leisure-work divide (for the best or the worse), keep raising questions about togetherness and commons. The novelty of our quests keeps questioning the very ways we live together and maintain a symbiotic relationship with our planet.**

And in a world which is more and more liquid (Bardhi and Eckhardt, 2017; Bauman, 2013), strategic thought on issues of collaboration and work keeps lagging behind because strategizing itself becomes also more and more non-emplaced (e.g., grounded in a 'strategic node' or actor) and ephemeral. New modes of organizing needs to build and re-build continuously their ways to strategize the world. A common ground in a liquid and dynamic organization remains the collaborative spacing and emplacement of collective activities, the encounter that defines a fleeting business model or an attempt at organising a platform of actors, complementors, consumers, suppliers and so forth, until the next update takes over and envelopes the last attempt. Competitive advantage has long been declared dead (McGrath, 2013) but for organizations to survive a form of competitive renewal needs to foster a constant sense of strategizing beyond the current configuration and sense and build a collaborative space that inspires minds and creates value for others and world around them. These new forms of organizing have become urgent for the common good in our societies.

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A dive into the hacking sea (interview with Pr. Gabriella Coleman)

Gislene Feiten Haubrich[4]

Listening to Gabriella Coleman is inspiring! Not only is her research fascinating, but her willingness to share knowledge guides us in an expedition through the hacking world.

It was a summer day in July. Gabriella, among many commitments, devoted some time to talking with us. Throughout this conversation, we spoke of her first steps in research and her turn to hacking studies. She helped us to understand concepts such as hacker, black, white, and grey hats and the relationship between hackers and cybersecurity. She also introduced some historical events around the hacking world, and of course, we ended this conversation asking for advice for those who want to start studying this fascinating phenomenon.

Gabriella (Biella) Coleman is a full professor in the Department of Anthropology at Harvard University and a faculty associate at the Berkman Center for Internet and Society. Her scholarship covers the politics, cultures, and ethics of hacking. She is the founder and editor of Hack_Curio, a video portal into the cultures of hacking. She formerly held the Wolfe Chair in Scientific and Technological Literacy at McGill University and was an assistant professor in the Department of Media, Culture, and Communication at New York University.

We hope you'll enjoy reading this interview as much as we did while working on it!

Picture 1: Gabriella Coleman

"Often, when people think of hackers, they think: 'Oh, they have no ethics'. And it's the opposite"

Gislene: Thank you, Gabriela, for accepting our invitation. You were very kind since our very first mail exchanging. Thank you! I will start our conversation with a very preliminary question. Why did you decide to become an anthropologist, and when did you decide that this was what you're going to do for life?

Gabriella: In high school, our history teacher was an inspiration. We found out that she had majored in anthropology in college, and we asked her to teach us a class in anthropology. Then, I basically fell in love with it. I think, for me, the reason why I found it so powerful was that there were just certain aspects in growing up around certain norms and expectations that I just thought were given. And then the anthropology class kind of showed me that different societies treat all sorts of things, whether it's around relationships or norms, very differently. And I found it really eye opening and liberating. That was what drew me in. And then actually, a year later, I ended up living on a boat for a year, doing environmental research with people from very different parts of the world. And a lot of the misunderstandings happening there were not personal; they were cultural. So that experience kind of reinvigorated my commitment to anthropology. So, that's basically what put me on the path to studying anthropology.

Gislene: You've been studying hacking for a long time. Was hacking your first topic on anthropology? How did your research on hacking start?

Gabriella: It was not my first topic. I actually, in some ways, was doing pretty traditional anthropological work in graduate school, working on religious healing in Guyana, the Caribbean, South America. Whereas I did already have a side interest in free and open-source software, I'd never really expected to pursue that for my PhD. But then, I ended up getting quite sick for a year, and I was stuck at home, and I had fast internet connection. I read more and more about these hackers who were really committed to openness and had created these alternative licenses. The more I learned, I was just really struck by the way that engineers reworked the law. By the time I got better, I decided: 'this is really what I wanted to do'! There was no anthropologist really working in this area, I had learned a lot, I was intrigued, I was puzzled. And so that's when I made the turn to computer hackers.

Gislene: Very interesting. And we've been... I've been hearing about hacking all my life. However, based on the way people sometimes frame it, approach it, I think it is not clear what is hacking, after all. From all your research, and you are, I think, one of the best people to really explain to us what is hacking, and why is it important in our society?

[4] Researcher at CITCEM and Vrije Universiteit Amsterdam.

Gabriella: So, hacking and hackers[5]. On the one hand, you use these terms, and everyone knows, at some level, what you're talking about, or a picture comes to mind. For a lot of people, it's a very narrow picture that often pertains to what sort of hacking is in the news. It might be around ransomware or nation-state hacking. Certainly, those aspects of the hacking matter, and they're sort of legit, bonafide hacking. But the domain of hacking is so much larger, so much more diverse, and so much more interesting. It tends to be technologists, although it doesn't necessarily have to always be tied to technology. But it's often tied to technology and computers. It's about individuals who have a sort of heightened commitment to either kind of computing or some aspects of computing in ways that often challenge normative treatments around knowledge and computing. That's a very broad sort of definition because, within that bucket, there are very different types of hackers. There are those that liberate information, those that secure systems, and those that use their skills for protests. So, there's nothing that kind of unites all hackers because there are different sets of practices and different sets of ethics. If there's something that unites all of them is a passion for computing. It is not of accepting the given ways that society treats computers and knowledge. And it is providing alternative paths around things like knowledge, security, and protest. Maybe one additional element is the idea that hackers are highly individualistic and loners. And for sure, some hackers are committed to notions of individualism, but it's a very collective practice as well. It's very, very collective. Whether it's the need to be collective to make things or the fact that hackers get together all the time, socially and professionally, to do their work, they also kind of get together to celebrate hacking as well.

Gislene: I will seize this comment you're sharing on how they have this 'will' to be together and socialize. One of the concepts that have been inspiring a lot of, for example, coworking spaces, at least that first generation, are the one of hackerspaces. What can you share with us about your experience in these spaces? How it was for you seeing hackers socialize in these spaces? Actually, how it was for you socializing with them?

Gabriella: I've been to a lot of hackerspaces, in different places, from San Francisco to Italy, to many other places. Hackerspaces are dedicated spaces, oftentimes in cities, where hackers come together to socialize but also to move projects forward. And this kind of face-to-face time is incredibly important for hackers. Hackerspaces are places where hackers get together routinely. There are very different types of hackerspaces. Some of them are very pragmatic, and it's all about the kind of technology and certainly creating a space where people can come together and learn from each other. And obviously, there's a politics to that. But other hackerspaces are very politically oriented. We have hackerspaces, for example, in Italy, that are kind of leftists and anarchists[6]. So, on top of the technological aspects, there's a real commitment to social change and social justice as well. I'll never forget this one time. I was in a meeting in Italy, in a big square, where they have a hackerspace. The meeting gathered a bunch of Italian hackers in Rome who were organizing a yearly meeting. They were going to hold the meeting at Hack lab that was a Makerspace, and it was called Fab Lab. And for, I think, two hours, it was just a big debate as to whether to call it a Makerspace or a Fab Lab, because that's what it was, but oftentimes makerspaces and fab labs don't have a very political orientation. But this group did. And so they were worried that by calling it a Makerspace or a Fab Lab, it wouldn't convey their strong politics. And so, for like, two hours, they were just debating what to call the space. So, this is a little story just to share that, along with creating spaces where people can come together to make, create, learn, and innovate, a lot of hackers also care about things like their ethics. Or the legal licenses or the terminology they use. Those social aspects that are non-technological are really important in hacking and partly bind people together as well.

Gislene: That's interesting. They choose to go to a hackerspace or create any other situation where they can gather and put forward some projects. So, that anonymity that sometimes might be related to hacking, maybe because one of the most famous hacking movements is 'Anonymous'[7], it's not a point for all possibilities of hacking.

Gabriella: Absolutely. And in fact, most hackers are not anonymous. Even though the kind of hacker hacktivist collective Anonymous is and was indeed anonymous. And historically, too, there were some hackers who were non-malicious 'Blackhat' hackers who broke into systems to learn about them and to protect themselves. Many of them were anonymous or pseudonymous. But the great majority of hackers are out in public. People know each other. And in some cases, identity and verification are really important. Certain hackerspaces are very open. Noisebridge, for example, had a very open-door policy, and it created some problems. So they had to put some limits on who could enter the spaces. People really get to know each other. In projects that are more virtual

[5] To go further, check the draft of Gabriella's book chapter on the definition of Hacker.

[6] To go further, consider Gabriella's text at The Atlantic: The Anthropology of Hackers - The Atlantic

[7] "Anonymous, part digital direct action, part human rights technology activism, and part performance spectacle, while quite organizationally flexible, is perhaps one of the most extensive movements to have arisen almost directly from certain quarters of the Internet". From *Coding Freedom* - Coleman (2013, p. 210)

projects, like free and open-source software projects, people work virtually, but they do get together face-to-face during conferences. In many of these projects, there are also procedures to verify your identity. For example, with Debian, which is one of the largest free software projects in the world, once you become an official member, you have to give your cryptographic keys to another member for them to verify and sign in person. It must be done in person. So yes, there are all these different elements of the hacker world that are face-to-face. But that's probably not something that most people think of when they think of hackers.

Gislene: Yeah, I think so. Because, well, you studied so much about Anonymous, but there is only one face that we generally see about it. We often see the only face of the movement available through television or social media. So, we don't really understand what is behind it. For most of the society, that's like: 'okay, they are doing some criminal things', because sometimes that's the way they are pictured. So, there are a lot of faces that we should shed some light on about hacking. And so, it's interesting what you're saying about how they have to show their identity; how they must prove who they are and what they do. And that's quite interesting and new, for people, I think.

Gabriella: Absolutely. And it's something that even as I think, more people understand that hacking isn't simply criminal. Nevertheless, that kind of stereotype of the loner hacker who, even if not malicious, is maybe a little bit, you know, crazy and not socially adjusted, is maladjusted. That's just so wrong, right? There are all sorts of people. And for sure, hacking is a great space for people with disabilities. For people who are not neurotypical, they're very safe spaces. But I would say that's the same for the Academy as well. The Academy and hackerspaces have a similar population. But the Academy is recognized and socially legitimated in a way that hacking is not.

Gislene: Could you explain some historical reasons why we don't socially recognize hackers? You do a lot of research in that sense. And recently, you and Mark Goertzen published a report about many aspects of hacking, including historical events. Can you share some of the ideas you discussed there?

Gabriella: I think one of the reasons why there are such strong misperceptions is the real lack of information and studies on the history of hacking. Apart from a handful of journalists who did some really interesting research and writing in the 70s and 80s, there's so little work done on hacking in the past or historically. The exceptions are Ron Rosenbaum, for Esquire magazine (Secrets of the Little Blue Box), or Steven Levy, who wrote a book on hackers (Hackers: Heroes of the Computer Revolution). However, that history is really interesting because it shows how social hackers were. For example, some of the first hacker communities were in universities like MIT[8] and Stanford and other European computer science departments. Hackers would get together in person and try to figure out ways to get more computing time because computers were not easily accessible. They had to use the labs at night to get access to computers. And the people that were really excited about computers, they were a small number, and they banded together and got to know each other pretty well. They became obsessed. Another important node of hacker history was the phone freaks. They were phone enthusiasts who learned how to make free phone calls. They were precursors to different types of hackers, and they would get together on party lines and conference calls. Again, it is a history we know very little about. It was only recently that a major book on phone freaks called 'Exploding the phone' (Phil Lapsley) was published. And then finally, another kind of important group that has also been very understudied was the small secret associations of hackers in the 1980s and 1990s. They banded together into small groups, and many of them broke into systems, largely because it was exciting. You could learn a lot about computers and security, and you couldn't learn this stuff at the university. So many of these hackers, and this is what I wrote about in this report with Matt Goerzen, many of these hackers eventually left the shadows and started to contribute to the security industry. But that pre-history, whether it's in the university, the phone freaks or the small kind of associations, there was very little work done on them at the time when they existed and even today. That kind of lack of knowledge about them is one reason why you have such persistent misrepresentations and stereotypes today.

Gislene: Yeah, this misperception is not out of the blue, but something that unfortunately, they have been on undeveloped...

Gabriella: exactly for a very, very long time.

Gislene: And about the report, the title is 'Wearing many hats', and earlier you talked about 'black hats'. I must admit, this is new vocabulary for me. What are these hats and why those colours? We can have an idea but if you can explain.

[8] Click here to read about the OWEE Expedition in MIT and Harvard University conducted by RGCS members. The expedition focused on understanding "how can elite institutions and an elite territory originate key collaborative practices and ideology such as hacking, open knowledge and open innovation?"

Gabriella: In the security world, hackers will often use the terminology of black hat, grey hat, and white hat. Nowadays, black hats usually mean sort of malicious hackers, while white hats are those that often work on behalf of security companies to fight the black hats. And then the grey hats. They are not morally ambiguous or dubious, but they historically or currently are willing to, perhaps, use methods like breaking into systems to understand security and improve security. Nevertheless, the terms also have a history, right? So, today they're used in a very straightforward way. But the terms themselves only came into being in the 1990s and really solidified in the 2000s. It was actually these non-malicious black hats, people who broke into systems, often for learning, pedagogy, and to connect with others. These non-malicious black hats were like: 'we have something to offer society and the security industry because we have the skills and the knowledge to actually stop malicious hackers'. But they faced a problem: they were breaking the law, at least some of them. They hadn't been legitimated by institutions. They didn't have credentials, like degrees or certificates. And certain individuals, we're saying 'don't trust these individuals, because they're like... if you hire them, it's like hiring an arsonist to put out a fire'. So, these hackers were like: 'no, we actually were breaking into systems, not to destroy them, but to learn about them. We're credible. We trustworthy'. And they had to spend a lot of time convincing the public, journalists, and other security professionals that they were to be trusted. And some of these hackers came up with the term grey hat to designate that they came from hacking subcultures. And they were still wanting to have a strong connection to those subcultures but also denote they were not black hats. They had the knowledge of black hats that could be put to good use. So, grey hat was a term that was invented to mediate that transition from the amateur, illegal scene into the kind of professionalized security world. And precisely, this history is interesting because, again, the terminology black, white, and grey is very common today. It has been used in a straightforward way. But on unearth that history? It took an enormous amount of work. And it was such an interesting history! It was such a perfect time to do that work because a lot of the hackers who had illegally broken into systems were willing to talk today because the statute of limitations had run out, so they couldn't get in trouble. And so they're willing to be public about their past in a way that 15 years ago, I don't think they would be willing to talk about it. It's also perfect because you could talk to individuals who were still very much alive. And then corroborate with archives as well. So it's, it's partially talking to people. And then it's digging into a lot of the material online as well, to unearth that history around the black, grey, and white hats.

Gislene: At the time, they weren't willing to talk about this because they could be persecuted. Were there some situations they went through? Was there a regulation that has changed that since then? Or now they feel secure just because a long time has passed?

Gabriella: Mostly because the time has passed. I mean, it is the case that, I think, this is quite recent. Even back in the 2000s and forward, when a lot of these former, again, non-malicious black hats were like: 'Hey, we have these skills. Let us advise you on security'. One thing they're doing is finding vulnerabilities and publishing details around them. And this was part of the full disclosure movement: 'let's disclose fully what the problems are'. Back then, and even today, you know, people can get into some trouble doing that. Even when it's done in the public interest. Over the years, certainly, norms have solidified that it has become accepted, as long as you're trying to fix problems in good faith. It's far more acceptable to release this stuff publicly. Although today, companies prefer what's called 'coordinated disclosure'. In this case, before releasing the vulnerability publicly, you'll go to the company and say: 'Hey, here's this problem, will you fix it?' And now companies will. Back in the late 90s and early 2000s, many wouldn't. They'd say: 'No, there's only a problem because you hacked it'. And the hackers would say: 'no, no, we were able to hack it because your security is bad'. So back then, it was quite risky. I think it continues to be risky, but nothing like it was in the past.

Gislene: What would be the highlights that you discuss in the report "Wearing Many Hats: The Rise of the Professional Security Hacker"?

Gabriella: The highlights. I think that the big one is there's a group of people today who are part of the security industry who are esteemed figures. And many of them are former black hats. The report details the cultural and ethical work they had to do to be seen as credible experts, given that they weren't credentialed and were breaking the law. We look very closely at that sort of labour that was necessary, so they'd be treated as credible experts. Another element has to do with the types of problems they focused on, which tended to be very narrow, technical problems. Today, with social media, you have problems which are not simply technical but are socio-technical, like harassment online. And it was one of the things we wanted to highlight: how, perhaps, the lack of diversity in the hacker world partly explains their technical, highly technical focus. Of course, that was what they were good at, and it's very valuable. Nevertheless, they tended not to be the figures who were being harassed or pushed offline, which was happening. And being aware of those issues and trying to mitigate those social vulnerabilities only came much later. In another point of

the report, we wanted to highlight how the early origins of this community and their makeup also put them on a very technical path, something that led them to overlook socio-technical vulnerabilities that were always around but really came into full force with the rise of social media as well.

Gislene: Are there groups focusing on understanding these bubbles we have on social media and how this is making things more complicated than they already were? Or which kind of focus do they have?

Gabriella: Yeah, I mean, the hacker community still tends to focus on the technical side of things. However, the rise of misinformation and disinformation has spurred segments of the hacker community to think especially beyond the merely technical. Some solutions can be technical, but many solutions are about policy, law, and regulation. And there are lots of debates around what is an appropriate way forward. Given that, often, when you're dealing with things like disinformation or misinformation, you have to block information and block people. And it's something that, I think, again, the hacker community doesn't have some universal commitment to anything. But they do care about things like access and freedom of speech. And so many think very carefully about how to deal with these problems in a way that then doesn't introduce massive censorship, right? And there are no easy solutions often. But these are the sorts of issues and questions that many hackers that are a part of the security community do talk about and think about today in a way that they didn't do so much historically.

Gislene: Yeah, because nowadays, the problem is visible. We cannot deny it anymore.

Gabriella: You cannot ignore it. Again, always there to some degree, but it really just there was a tipping point, right? In the last five, seven years around this?

Gislene: Earlier, you talked about how good faith mobilises their action. Is this related to their ethics or not? What is the ethics of the hackers? I find it very fascinating, and I think we can learn a lot from them, in that sense, as a society.

Gabriella: I completely agree. Often, when people think of hackers, they think: 'Oh, they have no ethics'. And it's the opposite. Of course, there are some criminal hackers who are stealing things. And it's a very complicated domain. I mean, I'll never forget this one conference I went to with professional security researchers. And there was one person who talked about criminal hacking as like wealth redistribution because many of the criminal hackers came from, you know, places that yet don't have strong economies. So I was like: 'oh, that's definitely a way of looking at that'. But yeah, whether it's free software security, hacktivists, cryptographers, there's no universal ethic. Though, there are these tendencies to care about things like privacy, to care about free speech, to care about access. And what's remarkable is how ethnically dense the hacker world is. People will be writing manifestos or legal guidelines that instantiate ethical norms. There'll be big debates around these ethical questions. And to me, that's the most important part, not that there is some singular hacker ethic, although sometimes you'll hear that: 'oh, there's this hacker ethic'. And in part, that stems from this book by Steven Levy. It's a wonderful book. And he worked with these university hackers in places like MIT, and he saw that they were committed to access and computing. And they believed in meritocracy. And so he went and laid out the hacker ethic. And it's an interesting set of precepts that, again, a lot, but not all hackers adhere to. It's a general framework. But I think the more important point is that hackers care about ethics, that they're instantiating it, they're living it through their projects. It pertains to different things depending on the community. So the community that is building privacy tools, such as the hackers that are part of the Tor Project. They're devoted to creating systems where you can be anonymous and move through the internet privately. Other communities are about releasing source code and underlying directions of software. Other communities are about creating secure systems that help consumers. But again, the point about ethics is that they're talking about it, they care about it, and they instantiate it in their practices and their documents. And that's kind of what makes, I think, the hacker community a bit different from, let's just say, academic computer scientists. Some of them obviously do care about ethics and follow ethical guidelines. But as a community, they're not united by this sensibility, where the ethics of things like security, privacy, freedom and access to our front and centre.

Gislene: One reason I think we should and can learn a lot from them is that they know how to identify things. And we as a society, as regular people, often don't know how to do that. So, it's the knowledge that's quite precious. And that would be great to have access to and learn from it.

Gabriella: That's a great point. I mean, they're specialists, they're experts. And not all of us can become experts in different domains. And for sure, I think people can understand the general contours of the debates. Still, precisely, these hackers live and breathe the technology and the ethical questions. And in some ways, it is very interesting and important to turn to them for guidance around these issues. But again, there's a very technical

component to them. And it's not something that every person can just fully understand off the bat.

Gislene: Yes, that's for sure. There are a lot of complicated terms, notions, and math behind it. But understanding them and their mindset, the way to question things; I think that's quite interesting and very inspiring. In that sense, I must ask you about Anonymous[9]. I've read your book, and it's fascinating. How was interacting with the group? What can you tell us about this experience?

Gabriella: So, Anonymous is a collective that, by 2010/11, became increasingly focused on protests and political activity. It was a kind of movement that I studied pretty intensely between 2011 and 2014. It started in 2008, but the height of their activities and popularity increased in 2011, 2012. They were highly anonymous. A lot of individuals, not all, but a small and very prolific group was breaking the law. They were hacking into systems or engaging in distributed denial of service attacks, which are also illegal. It was truly exciting but also a challenge to study them. I mean, they were open to me. I could be present in the chat rooms where many members were located and congregating to organize themselves. And so they enjoyed having a spotlight on them. I helped to facilitate relationships with journalists. I think they found me 'handy' to have around. In that sense, it wasn't too hard to, at least, get minimum access. But it definitely took time to gain the trust of individuals. I was never sure of what was true and what wasn't. I was very concerned about being included in illegal activity before it happened. I never wanted to know about things before they happened, and often, I had to remind people: "don't come to me with your hacking plans". I knew there was probably law enforcement, as well, on the channels or informants. It was a very challenging space. However, with time, I got to meet people, and those people could be forthcoming. So over time, in some ways, it got easier. But it really required a lot of time and presence to understand what was going on; to feel that some people gave me their trust. It is something that I don't think I could have cracked that sort of social puzzle without constant co-presence for many years.

Gislene: In that sense, considering this required virtual presence for you to get through this puzzle, you were also building methodological approaches to anthropological research. Can you tell us a bit about this process of creating methodological strategies to go through online data?

Gabriella: Yes, certainly. Unlike some of my other projects on hackers, this project was very virtual. There are different methodological aspects of doing research with hackers who are mostly online. One of the challenging aspects is the sheer quantity of information. For instance, there were multiple chat rooms and people chatting for hours, so it got very overwhelming. They were also doing many activities and were regularly in the news. One strategy I developed was writing a sort of 'daily log', something like a 'Captain's log', where you highlight the most important parts. I would also take a lot of the data and tag them to find them later in relation to the blog. But I only started to do that within a couple of months into the research, when it became clear that just writing my field notes every couple of days was not enough. That was just one aspect of the sheer abundance of information. I think that online ethnographers really confront that. There's just so much information, so much data. Of course, there are certain tools that can help you on managing it. However, sometimes, one of the best things you can do is have a team of people working on an area. For example, the Data and Society, which is a research institute in New York City. When they were researching the far right online, they had big teams working on it. It was ethnographic and anthropological, but they had teams. So, that's one aspect, which, again, is just the sheer gluts of information you encounter when you work online. And that certainly was one of the biggest challenges for me while I was doing my research on Anonymous.

Gislene: I can imagine because it's about dealing with the amount of data and with all the constraints around the situation. It's a lot of things to manage and to deal with. So, Gabriella, we're heading towards the end of our interview, and I must ask: what have you been working on and what are your plans?

Gabriella: So, the report you mentioned. It will probably be the basis for a book. It was a long report with 50,000 words. And we could have written more, but we were forced to cut it off. So we'll probably write the book. My co-author, Matt Goerzen, and I want to do a bit more research on European hackers. Even though we did interview quite a few European hackers, the story we told focused on a couple of big American groups. However, some of the most important hacker groups from whose members became key security professionals were in Europe. We interviewed some of them, but we want to tell that part of the story and centralise it. That's research that we still have to do. I'm also writing a book of essays that draws from former and new research. It's hard to describe the book in a sentence or two, although hopefully, I'll be able to, eventually. Briefly, the book juxtaposes different types of hackers, from those working

9 You might also want to look at Gabriella's book based on this research on Anonymous. Click here to learn more.

for the State to those that fight the State. I also include hackers in different time periods and parts of the world. I'll gather the essays in one collection to remind people that hackers don't have one and only profile. We have hackers who are extremely antagonistic to the State, like Anonymous and other hackers who were part of this underground tradition and then became part of the security industry, whose work in part helps to fortify the State. The essays are story-driven, and the book is a collection of hacking takes on many different formats, depending on type, place, and group. The essays will show this diversity because they'll feature very different histories and projects in one collection.

Gislene: Oh, that's great! I'm already curious and willing to read it! Our final question is: for those researchers or these people who want to become an anthropologist and study Hacking, what are your recommendations?

Gabriella: Wow! There's so much to share! First, I hope people do it. The field has proliferated quite a bit. Nevertheless, especially ethnographically, there's very little research, and there's room for so much more. If you are interested and don't know too much about the world, you want to start by seeing what's out there. There is a website that a few other people and I created and currently curate. It's called 'Hack curio' and is a video museum of the cultures and politics of hacking. It gives a good picture of the different practices around hacking. Also, it spans blockchain to hacktivism to free and open-source software. I think it gives you a really good idea of what's out there. It gives you a good idea of what some of the work that people have done as well. But there's just so, so, so much to do, whether it's following really exciting projects in the world of blockchain or doing historical work. Also, the more work that can be done in the non-English speaking world, the better. There are really rich histories in places like Germany or, for example, Argentina, which has one of the biggest scenes for security and hacking. I don't think anyone has done anything about that. So, there are just these vast areas that are still untapped for research. It's a very exciting domain to enter if you're interested in technology and ethics. Also, if you want to enter in an area that has been understudied hacking is perfect.

Gislene: Very inspiring. I'm sure that people will come because the field is fascinating. The website is quite nice. I've been there and would really recommend to everyone to visit it! Gabriella, thank you very much. I learned a lot. It was great. Thank you for your time and for being so nice.

Gabriella: Thank you! And thanks for doing this as well and asking me to participate.

The Crisis of the Commons: An Inquiry into 'Technologies of the Commons' as Tools for Organizing

Ian Munro[10]

Introduction: commons as organizational technologies

The concept of the 'commons' has gained increasing attention throughout a wide range of disciplines including economics (Ostrom, 1990; Ostrom, et al. 1999; Patel, 2011), computer studies (Berry 2008; Stallman 2002), human ecology (Hardin, 1968), legal theory (Lessig, 2002, 2004), political theory (Hardt and Negri, 2009; Hyde, 2010; Terranova, 2004) and history (Hill, 1972, 1996; Linebaugh, 2008; Neeson, 1996; Thompson, 1991). Berry (2008) has traced a concern for the commons as an organizational problematic to Ancient Roman law with its categorization of *res communes* and *res divini juris* to identify domains of objects that may be legally subject to common ownership and usage. Recently, concerns have been raised that common are now an existential crisis, which threatens the welfare and existence of future generations (Klein, 2014; Fraser, 2022). This article argues that the concept of the commons provides an insightful approach for analysing organizations, which with some exceptions has been largely neglected within the field of organization theory and management studies (de Vaujany et al, 2022; O'Mahony, 2003; O'Mahony and Ferraro, 2007; Von Hippel, 2005).

The idea of the commons appears in diverse domains of activity, including the governance of ecological resources (Barnes, 2006; Hardin, 1968; Ostrom, 1990; Perelman, 2003), the organization of information and knowledge production in a 'creative commons' (Berry, 2008; Hardt and Negri, 2009; Lessig, 2002; Von Hippel and Von Krogh, 2003), and cultural traditions and customs (Hill, 1972; Linebaugh, 2008; Neeson, 1996; Thompson, 1991). The argument of this article will draw upon these different conceptions of the commons in order to outline a framework by means of which the commons can be understood as an organizational phenomenon that bridges different domains of organizational analysis.

This article investigates how 'technologies of the commons' (Berry, 2008) can be created by self-organized communities to govern the distribution and production of collectively owned resources. Broadly speaking 'technologies of the commons' are institutional arrangements for the maintenance of a commons and the sustainable use of its resources. Such communal technologies have been created to exploit the manage the creation and distribution of informational and ecological resources. To begin with, I shall explain why it is that certain resources have been conceived of as commons in the first place.

1. The Reappearance of the Commons

The notion of the commons was a major feature of economic and social life in Europe until the 19th Century, at which time it came under increasingly aggressive attacks by corporate capitalism as a key organizing principle of social life (Hill, 1996; Neeson, 1996; Linebaugh, 2008). Historical studies of the commons have detailed the emergence of 'rights of usage' and 'rights of common' during the Middle Ages which permitted limited access for the poor to forage forests and pastures (Hill, 1972, 1996; Neeson, 1996; Thompson, 1991). Customs such as estovers – the right to take wood from the forest for firewood or to repair one's dwelling - formed an essential element in the livelihood of the poor, and especially poor women (Linebaugh, 2008). Up until the time of the Industrial Revolution, customs regarding access to and the use of the commons were a major feature of the moral economy of European society (Neeson, 1996; Thompson, 1991).

Thompson (1991) has observed that since the publication of Hardin's (1968) influential work on the 'tragedy of the commons', commentators have tended to assume that the 'commons' were destroyed by the commoners themselves through the over usage of the resource system. However, historical studies show that Hardin's view of history is not supported by the evidence, and that the commons were destroyed by the legal measures that favoured the land-owning classes such as the enclosure laws, rather than by over-usage by the commoners (Hill, 1996; Neeson, 1996; Thompson, 1991). In this respect, (Thompson, 1991, p.107) observed that, '...commoners themselves were not without commonsense. Over time and over space the users of the commons have developed a rich variety of institutions and community sanctions which have effected restraints and stints upon use.' Ostrom's (1990) recent research into commons governance maintains a similar view citing historical evidence pertaining to the successful long-term management of common lands. This research clearly supports the view that self-organized user communities can play an active role in the maintenance of common resources.

The commons provided a widespread alternative to market-based forms of social life, which gave commoners

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access to important staple resources and left time for recreation that was not available to those engaged in industrial wage labour (Hill, 1996; Neeson, 1996). Historical studies of the commons are replete with examples of rudimentary practices of commoning (Hill, 1996; Neeson, 1996; Thompson, 1991). Hyde's (2010) study of the commons has identified three forms of commoning that were characteristic of the pre-industrial economy, i) right of *piscary* to fish in streams, ii) right of *turbary* to use turf for heating, and iii) right of *estovers* to collect wood from the forest for heating and house repair. These common rights were practices that sustained the peasant economy. These were defined and defended by other practices such as an annual perambulation by commoners to mark out and claim the bounds of a given commons. According to Linebaugh (2008) the idea of the commons was key to one of the founding documents of modern democracy, The *Magna Carta*, which established fundamental rights to subsistence, free movement, access to commons, reparations and *Habeas Corpus*, among other things. I shall now turn to an analysis of the composition of different forms of commons and the governance of organizations based within each commons.

2. The Peculiarities of 'Common' Resources

The key characteristic underpinning the concept of the commons is that access to it is 'open' in important respects and that this openness is not incidental or a matter of ideological preference but is a material feature of the commons itself. In the language of economics such resources are termed 'imperfectly-excludable'. All commons are composed of imperfectly excludable goods, although the degree of 'openness' of a given commons and access to its resources are regulated by the users of that commons. Historically, the access rights and restrictions to a commons were known as 'stints'[11]. In economic theory, two elementary forms of commons have been identified, those which are composed of non-rivalrous resources and those composed of rivalrous resources (Lessig, 2002). Rivalrous resources are subject to competition over their consumption, since they exist in only limited supply, such as streets and parks. However, non-rivalrous resources such as ideas, knowledge and language are not subject to the same limitations as rivalrous resources. Once produced, a non-rivalrous resource can never be exhausted; your consumption of the resource will not decrease the amount that is available for use by others. These peculiar material characteristics of common resources have significant implications for their management and their systems of governance, a fact that has been highlighted both in the organization of ecological resources (Ostrom, 1990; Patel, 2011) and in the organization of informational resources (Lessig, 2002, 2004; Terranova, 2004) and the open source movement (Demil and Lecocq, 2006; Lessig, 2002; O'Mahony, 2003).

Common resources have material characteristics that impose crucial limitations upon and open up possibilities for forms of governance appropriate for their maintenance and development. The governance structure of different commons is tied to the 'empirical situation' within which a particular organization is located (Ostrom, 1990, p.13). What is of particular interest for our purposes is that the characteristics of both ecological and informational resources have led to the proposition of alternative 'commons' forms of governance (Berry, 2008; Dietz et al., 2003; Lessig, 2002; O'Mahony, 2003; Ostrom, 1990).

We might understand such systems of governance as mechanisms for dealing with what Callon (1998) has characterized as 'overflowing,' which concerns the management of externalities that have escaped the market framing of a given transaction. Indeed, it has been suggested that such systems of self-governance can lower transaction costs of organizations, both in the information commons (Demil and Lecocq, 2006) and in the ecological commons (Ostrom, 1990). The idea of 'commons governance' can be seen to develop both from a negative critique of the limitations of markets and hierarchies in allocating goods and a positive critique based upon the development of 'technologies of the commons' which are institutional arrangements for the maintenance of the commons and for the management of associated externalities. David Berry (2008) originally coined the term 'technologies of the commons' to explain the success of free and open source projects developed on the Internet such as 'wikis', the content management systems of websites, mailing lists that facilitate online debate, and other tools that allow users collaborate together in open source projects. Berry (2008, p.136) also includes legal licences such as GPL and the Creative Commons in his conception of technologies of the commons, which help protect the infrastructure of the commons. We can fruitfully extend this idea of technologies of the commons to practices and techniques that facilitate the maintenance of other types of commons, including both informational, cultural and ecological commons. I shall now turn to an analysis of the composition of two major types of commons: the informational commons and the ecological commons.

3. Innovation and the Informational Commons

[11] There is some disagreement in the literature as to the nature of stinting, for instance Lewis Hyde has (2010: 35) argued that, 'A true commons is a stinted thing…', whereas Neeson's (1996) historical study of commons in England in the 18th century notes the existence of many commons that were unstinted and thus open to anyone.

Professor of Law at Stanford University Lawrence Lessig (2002) has shown that many aspects of everyday life involve the use of common resources, such as public streets, public highways, parks and beaches, writings that are not under a current copyright, and perhaps most importantly, language itself. In his book, *The Future of Ideas: the fate of the commons in a connect world*, Lessig (2002) explains how the Internet evolved from a physical layer of computers, terminals, cables and so on, which was proprietary, but also from a layer of code, the majority of which is available free of charge. This includes the Apache operating system on which about two-thirds of Internet servers run, email routing software, the public domain TCP/IP protocols, the Linux operating system, and the World Wide Web itself. Lessig's (2002, p.57) overview of the key developments of the software on which the Internet runs has led him to observe that, 'The most important space for innovation in our time was built upon a platform that was free.' By making this software free, the costs of innovation are substantially lower than if it were based upon a purely proprietary model. Lessig is not arguing that all software should be free, but that, as a society, we ought not be so quick to grant monopolies on the use of ideas and new inventions. He points out that knowledge is both an input and an output of the creative process. By putting a price on intellectual property and charging for its use we might provide an incentive to produce more inventions, but this will also increase the costs of the production of future inventions thus stifling future innovation.

Lessig proposes that although inventors should be paid for the product of their labour, they ought not be granted a complete monopoly over the use of their ideas by others because such ideas are a common resource which can enrich us all. Perhaps the most distinctive aspect of the innovation commons is that it is not exhausted when it is consumed. This is true of all kinds of symbolic media whether it be language, music or scientific knowledge. Not only does the consumption of an idea or a piece of music leave the resource fully intact for anyone else to use, but it may stimulate further innovation, and thus increase the resource available for others. Lessig (2002, p.250) argues that it would be absurd to put a price on the use of all intellectual property because, in his own words, 'We refer to plots in movies to tell jokes without the permission of the director. We read books to our children borrowed from a library without any payment of performance rights to the original copyright holder.' Consider for a moment a vision of a world in which all ideas were subject to stringent intellectual property regulations the instant they were created, where one could only talk, think, and use the ideas of others under licence and as such only the wealthy could afford to think freely. He cautions that laws for exploitation of culture for economic gain are increasingly invasive where, 'the content of our culture is controlled by an ever-expanding scope of copyright.' (Lessig, 2002, p.110). Lessig turns to the work of Thomas Jefferson in search of an adequate formulation of the information commons and its peculiar characteristics. Jefferson described this commons with great eloquence in the following manner:

> '[1] If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it. [2] Its peculiar character, too, that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lites his taper at mine, receives light without darkening me. [3] That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement, or exclusive appropriation. [4] Inventions then cannot, in nature, be a subject of property.' (Thomas Jefferson, *Letter to Issac Macpherson* 1813, quoted in Lessig, 2002, p.94).

This captures the essential aspects of the information commons, where Lessig breaks this statement down into four key insights. First, information is imperfectly excludable, meaning that once it has been passed on it cannot be taken back subsequently. Second, it is non-rivalrous, meaning that when information is consumed it does not diminish the resource available for others to use. Third, the physical properties of information make it very easy to spread, like air or fire. When considered together we can infer a fourth property from these characteristics - that inventions cannot and should not become private property. Lessig also points out the irony that this analysis came from the pen of Thomas Jefferson who was the first commissioner of the US Patent Office.

Arguments for the protection of the innovation commons as an open resource have emerged from diverse areas of social life and political persuasions, including popular music groups such as Radiohead and Neil Young, business writers such as Don Tapscott and Andrew Williams (2007) and political theorists such as Hardt and Negri

(2009) and Terranova (2004). The immediate reaction of big business to the emergence of the open source communities was to engage in a vicious legal war against the outsiders who were creating new models for producing and sharing intellectual property, especially in the music and software industries. These projects are not just confined to the software industry or the music industry but have gathered momentum across the economic spectrum as diverse as the mining industry, publishing, music, politics, and the human genome project (Berry, 2008; Hardt and Negri, 2004, 2009; Lessig, 2002, 2004; Tapscott and Williams, 2007).

Within the field of organization and management studies, the idea of the information commons has been used to explore the respective successes and failures of the open source community (Demil and Lecocq, 2006; O'Mahony, 2003; O'Mahony and Ferraro, 2007; Von Hippel and Von Krogh, 2003). The information commons is now actively maintained and defended against increasing enclosure through legal measures such as the General Public License (GPL). O'Mahony's (2003, p.1187) research into the open source community has explained the organizational significance of GPL 'copyleft' in the following terms: 'Informants using GPL do not use it to exclude others from using their work, but to codify norms of reciprocity and temperance or, in other words, to prevent code from becoming subtractable in future.' A host of other types of intellectual property licenses have been developed over to facilitate the creation of informational commons, which govern a variety of rights including rights of ownership, rights of use, rights of modification and rights of distribution., such as the Creative Commons License.

The problem of the occurrence of 'free riders' can be circumvented within the informational commons because information is not exhausted when it is consumed which lends itself to different possibilities for governance. Following the work of the open-source pioneer Eric Raymond (2001), Demil and Lecocq (2006, p.1463) have proposed an alternative system of organizational governance modelled on the bazaar as being 'particularly suitable for industries based on codified information goods'. O'Mahony (2003), Berry (2008) and Lessig (2002) explicitly refer to the commons itself as being a model for the governance of informational resources. These models take advantage of the fact that network externalities are associated with large numbers of users of information, where the existence of free riders may actually be of benefit to other users, for example in generating useful feedback about the existence of software bugs or general user-friendliness.

Research in management and organization studies has highlighted the conditions under which businesses might successfully make alliances with open source communities (Demil and Lecocq, 2006; Fosfuri et al., 2008; O'Mahony and Bechky 2008). Eric von Hippel has been one of the few management scholars to draw upon the idea of an 'innovation commons' in a discussion of Lessig's work in his pioneering study of user-driven innovations. Von Hippel's (2005, p.116) analysis of the potential of the innovation commons concludes that, 'We will learn over time whether and how widely the practice of creating and defending intellectual commons diffuses across fields.' Manuel Castells (2001) has suggested that new kinds of production in the network society are creating a new division of labour, which is based on cooperation in matters of innovation, and competition in the applications and services that are based on these initial innovations. Castells argues that the superiority of the open source model over traditional proprietary business models is clearly demonstrated by the development of the Internet itself, 'In sum, all the key technological developments that led to the Internet were built around government institutions, major universities, and research centers. The Internet did not originate in the business world. It was too daring a technology, too expensive a project, and too risky an initiative to be assumed by profit-oriented organizations.' (Castells, 2001, p.22).

With the development of new forms of communication and forms of post-Fordist production[12], the cultural commons has itself incorporated new social practices, especially with reference to modern information technologies such as the Internet. Political theorists on the left have argued that new forms of productivity associated with modern information networks and the Internet can be explained in terms of the commons drawing upon Marx's notion of the 'general intellect' (Hardt and Negri, 2000; Terranova, 2004; Virno, 2004). The concept of the 'general intellect' derives from Marx's analysis of technological developments during the Industrial Revolution which he described in terms of, 'the general productive forces of the social brain' (Marx 1973, p.694). These political theorists have thus argued that the general intellect has become a productive force within the modern network society, since it provides an intensification of our powers of cooperation and an intellectual, emotional and communicational infrastructure upon which all other networks are built. Under circumstances of rapidly changing technologies and their associated skills, the general intellect is described as a general capacity for cooperation which,

[12] Post-Fordist production is based on the flexible accumulation of wealth co-ordinated through global communication networks. Hardt and Negri (2000) have observed that Post-Fordist regimes of work have emerged in response to mass protests against factory labour, as well as new forms of neoliberal exploitation based on increasing precarious labour, knowledge work and emotional labour.

'guarantees readiness, adaptability, etc., in reacting to innovation.' (Virno, 2004, p.41). This conception of the commons is by no means without its critics. For example, Ossewaarde and Reijers (2017, p.27) have argued that technologically mediated commoning is a relatively isolated practice which "leads to cynicism that alienates commoners from the very practice of commoning". Dyer-Witheford (2005, p.159) explains the contradictory forces at work in contemporary informational capitalism in the following terms, 'The paradox of insurgent organization today is … that the same communication systems that constitute the general intellect of net-capital can be transformed into a revolutionary 'social brain', but only if such a project is constantly vigilant against replicating the very divisive logic against which it contends.'

In line with these critical analyses of the informational commons, it should be clear that what is at stake is not simply a matter of more or less innovation or lower transaction costs, as strictly economic explanations might suggest. Attacks on the information commons by corporate and state power have been relentless, when genuine alternatives to the information commons gain popularity. No better example of this exists that the case of Aaron Schwartz, who a research student and open source activist who helped develop the Creative Commons license with Lawrence Lessig and other open source projects. Schwarz committed suicide in 2013 after being hounded by MIT and the Justice department and threatened with $1million in legal fines and a 35 prison sentence for his efforts to create on open access depository of academic papers. Another example is the aggressive treatment hostility of the WikiLeaks network in revert years, where Benkler (2011) has explained the numerous attacks against this network by corporate America and the national security state as being "an attack on an important practice in the networked commons." The extent to which high-tech communication networks form a commons remains an open question and some remain skeptical of the emancipatory potential of these networks (Ranciere, 2006). We will now turn to an investigation of a quite different form of commons - the socio-ecological commons.

4. The Social-Ecological Commons

Within the field of organization theory and management studies there has been much debate over the emergence of 'ecocentric' and 'sustainocentric' paradigms of research (Banerjee, 2001, Moog et al, 2015; Purser et al., 1995, Gladwin et al, 1995). There appears to be little evidence concerning the extent to which environmental values are being adopted within corporations in practice. Bobby Banerjee (2001, p.507) has presented evidence that amongst practicing managers, 'there does not appear to be a paradigm shift to concepts like sustainability or econcentrism.'

The limitations of the market mechanism have been recognized in economic theory under the umbrella term of 'externality' (Marglin, 2008). An externality can be defined as the effect of a transaction on a third party who has not consented to that transaction, such as environmental pollution or workplace accidents. With externalities the social costs or benefits of a transaction are not fully represented by the market price and are thus not borne directly by the organizations or persons that produced them (Coase, 1960; Perelman, 2003). Marglin (2008, p.284) explains that, 'Once upon a time when the world was sparsely inhabited, once upon a time when we used relatively few resources, it might have been acceptable to relegate externalities to the realm of occasional nuisance and anomaly. But now that we live and work at close quarters to one another, our non-market interactions are much more part of the fabric of our lives, and externalities are of central concern.' Nowhere is the problem of externality more evident than in the (mis)management of ecological resources.

This year the Secretary General of the United Nations, António Guterres , observed that the destruction of the natural world has progressed unabated over recent decades, even in the full knowledge of the catastrophe that is unfolding (United Nations, 2022). In 2009, the International Union for Conservation of Nature estimated that approximately 48,000 species were at risk of extinction in the near future. Scientific research estimates that about 11% of bird species are threatened, endangered or extinct, 18% of mammal species, 5% of fish species and 8% of plant species (Heywood, 1995; Sutherland, 2003). These disappearing species may well possess unique properties, but since many are largely unknown to us or are not sold on the markets, they have no monetary exchange value. In economic terms, these extinctions register as nothing more than an externality. According to economist Michael Perelman (2003), the complexity and fragility of the ecosystem make it essentially impossible to determine the eventual consequences of destroying the next unit of natural habitat or the next species, and thus it is impossible to measure the genuine cost of economic activities that have such effects. Perelman has noted that the economic concept of scarcity works on the assumption that all qualitative distinctions and variables can be reduced to and accounted for in terms of one general form of equivalence in which, '… complex conditions are artificially collapsed down to a single monetary measure.' (Perelman, 2003, p.41). However, given that the ecosystem provides us with our basic human needs, its value to us is beyond measure.

An example of the complexities involved in the rationing of the ecosystem in economic terms can be illustrated with the example of bee 'pollination services' (Berenbaum, 2007; Benjamin and McCallum, 2008). At present there is a looming crisis facing the agriculture industry in Europe and the U.S. as a result of a massive decline in the number of bee colonies available to pollinate the annual agricultural crops. Crops that rely on bees for their pollination and reproduction include those which are a vital part of our everyday diet such as fruits, vegetables and nut crops (Berenbaum, 2007). The number of honey-bee colonies has declined by 40 percent in the U.S. over the past 60 years. The causes of the decline are believed to be a combination of the action of pesticides and bee parasites, which has resulted in widespread 'Colony Collapse Disorder.' This decline is not confined to the US alone and similar trends exist across four different continents. In testimony to the U.S. Congress one insect expert explained that if the current trend continues the managed honey-bee will cease to exist by 2035, where 'markets will respond, but may do so in ways that are detrimental to the economy as a whole' (Berenbaum, 2007). A collapse in bee numbers and their 'pollination services' would quickly lead to a collapse in important crops that are a vital part of our food chain. Many other ecological services have been similarly afflicted by harmful externalities including pollination, water filtration, soil fertility, and the regulation of water and climate systems (Patel, 2011).

The complexity of the eco-system and problems concerning the measurement of its value maybe one reason why its consumption may not be effectively rationed by the market mechanism (Callon, 2009; Perelman, 2003), but another reason is that there are actually positive incentives to destroy it. Bakan's (2004) critical review of corporate governance describes business corporations as 'externalizing machines', where economic incentives exist to externalise some the costs of production onto third parties, such as intentional pollution or industrial accidents which cause severe damage to our health and environment. His analysis draws on numerous cases where corporations have systematically broken the law because infringement is cheaper than compliance. Bakan observed that abuses of environmental protection legislation and health and safety laws are seldom detected or reported to regulatory agencies, and the prosecution of infractions are rare. He goes through a list of fines levied on large corporations to illustrate the fact that breaches of the law appear to be endemic in corporations. According to Bakan, breaking the law has become just another cost of doing business, where the corporation acts as a free rider in its exploitation and pollution of the ecological commons. Patel (2011) has developed Bakan's argument further in the context of relations between the rich Western World and so called third-world countries, where Western economies are acting as free riders on the eco-systems of their poorer neighbours. Patel (2011), Fraser (2022) and Klein (2014) argue that corporations have externalized massive environmental costs onto poorer countries, exporting their most polluting and damaging activities to the Global South. Klein (2014) observes that in the past is was possible for the global North to treat poorer countries as "sacrifice zones", whose natural resources, wealth and health were simply plundered or destroyed, today the entire world is becoming a sacrifice zone, with the destruction of the global ecological commons.

In the face of the limitations of the market economy Ostrom's (1990, 2007) research has explored a broad range of possible solutions that go beyond the usual dichotomy of market rationing or state control. Based upon detailed empirical analysis, her work reveals that locally managed self-organized communities are capable of devising forms of governance that can maintain communal resources and that can avert the tragedy of the commons.

Ostrom's (1990, p.30) research focuses on the management of what she terms 'common pool resources' which she defines as 'a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use.' This includes a huge range of both natural and man-made resources including forests, rivers, lakes, oceans, groundwater basins, irrigation canals, bridges, parking spaces and mainframe computers. The fact that common pool resources, such as fisheries and forests, are non-excludable leaves them liable to over exploitation and eventual destruction. Ostrom has proposed that both the state and the market have severe limitations as systems of governance for these kinds of resource. She observes that the success of state regulation is based upon the assumption of its possession of perfect information about the resources it manages and the assumption that the costs of administration and enforcement will be low, but that neither of these assumptions may hold true in practice. Ostrom is equally critical as regards the efficacy of the market mechanism. One key limitation of the market mechanism identified in Ostrom's work is that common pool resources cannot be easily privatized. The imposition of fences and the enforcement of property rights may be costly and they may face resistance in the context of indigenous cultures or local traditions. The difficulties of fencing a common pool resource are especially apparent in the case of 'nonstationary resources' such as fisheries or clean air and water. Ostrom (1990, p.13) has observed that, 'even when particular rights are unitized, quantified, and salable, the resource system is

still likely to be owned in common rather than individually.' Under such circumstances rationing by means of the market mechanism may cease to function efficiently.

In response to these apparently intractable problems, Ostrom provides a third alternative organizational form (dismissed in Hardin's (1968) earlier formulation of the tragedy of the commons), which is constituted by the self-governance of the community of users themselves. Ostrom shows how in practice, the users of a resource can meet to negotiate rights of common usage amongst themselves and build mechanisms for self-enforcement where their own stake in monitoring the commons themselves is made clear. Whilst the resource system may be collectively owned, the system can be self-managed by means of a negotiated contract which establishes commons rights of usage and clear sanctions for any infractions of these rights. These local systems of self-governance can themselves exist within a wider network of markets and state regulations (Dietz et al., 2003).

Ostrom's research has identified 'design principles' under which self-organized user communities tend to work well, including: i) where face-to-face interaction is the norm, ii) where the use of community resources can be monitored relatively cheaply, iii) where the rates of change in these resources tend to be moderate, iv) where outsiders can be easily excluded at a relatively low cost to create a 'stinted' commons, and v) where the users themselves support effective enforcement and rule following (Ostrom, 1990; Dietz et al., 2003). These design principles are institutional technologies of the commons for the self-governance of socio-ecological resources. She proposes that effective systems for self-governance on a small scale can lead to positive benefits for the wider system, an outcome that she describes in terms of 'nested externalities' (Ostrom, 2010). Ostrom and her co-authors note that few real-world situations correspond to this idealized situation, although they say relatively little about the 'struggle' to create such institutional arrangements (Dietz et al., 2003). In situations where such suitable contextual factors are not in place Ostrom's research proposes the use of other measures of governance such as privatization and state regulation. Now that the different forms of commons have been explained, along with the 'technologies' that have been developed for their maintenance, I shall discuss the implications of these alternative systems of governance for management and organization studies.

5. Discussion: Technologies of the Commons and the Crisis of the Commons

The commons is as yet an under-researched phenomenon within the field of management and organization studies despite having received recognition as an important domain of analysis in other human sciences. Although this article has focused on the informational commons and the ecological commons, many other characterisations of the commons exist, for instance, Negri (2003) elaborates on a collective 'temporal commons' and Ranciere (2009) defines the commons in terms of 'the distribution of the sensible.' Different commons present distinctive challenges for their governance arising from their history and their material characteristics. In the case of the informational commons, the non-rivalrous and inexhaustible nature of information presents opportunities for its exploitation that are not open to other kinds of resource (Note, Hardt and Negri (2009, p.283) include all these commons under the umbrella term of 'biopolitical production' and then state that this 'puts bios to work without consuming it,' which is not strictly true for forms of the commons which involve rivalrous resources). The problem of 'free riders' is mitigated in this commons by the fact that the resource is not itself exhausted by their existence. Because it is not exhausted in the act of consuming it, this has allowed for the development of technologies of the commons to foster network externalities including modular open source projects to facilitate the greater use of the information. The peculiarities of the informational commons have also led to the development of new forms of intellectual property rights in order to help organize and govern the use of this commons.

The governance of ecological commons presents rather different technologies and limitations. These resources are imperfectly excludable 'open' resources but they are exhausted when they are consumed. The issue of the 'free rider' is a far greater concern for the governance of this commons and this is reflected in the organizational design principles for commons governance that one finds in the works of Ostrom (1990) and others (Barnes, 2006; Dietz et al, 2003; Patel, 2011). A major issue for the governance of this commons is the issue of its immeasurable economic and social value. As we have discussed earlier the market price for ecological resources may be a very poor indicator of their significance in the ecosystem as a whole (Berenbaum, 2007; Perelman, 2003). Technologies of the ecological commons thus tend to be orientated around concerns for resource depletion and pollution rather than on issues of free distribution and modification that one finds in the informational commons.

Reframing Market Externalities and Overflows

Berry's (2008) analysis of this community has observed that the Free Software Foundation has been more radical in its ambitions to create an open informational commons, whereas the broader open source community

has shown greater interest in building and exploiting links with commercial partners. In this respect O'Mahony and Bechky (2008) have observed the emergence of 'boundary organizations' that have been created in order to manage collaborations between organizations that use these different forms of governance mechanisms. The aim of such boundary organizations is to preserve the integrity of each form of organization (market and commons), but promote limited collaboration where they have a mutual interest to do so. They note that all of the open source projects that they studied for their research had developed such boundary organizations for maintaining links with commercial organizations. The existence of boundary organizations does not dissolve the conflicting interests between the market based organizations and commons based organizations, but permits them to delineate areas of common ground and collaboration.

Mike Power (2009) has suggested that the commons can provide a useful conceptual resource for better understanding the management of market externalities, with particular concern for understanding 'systemic risks' and the development of institutional tools for their mitigation. Power (2009) confines his analysis to the externalities and systemic risks of the financial system, which can be viewed as a commons, but his insight is applicable across a range of different commons. Callon's (1998) analysis of the market externalities has described them as 'overflowings' that must become identifiable, measurable and calculable so that they can be made manageable. Callon thus observed that overflows can become re-framed within the market once they have become subject to some system of measurement. In this way, he proposed that it might be possible for organizations to internalize the social costs of overflows. A key limitation of taking such a market based approach is that it is premised on the existence of easy to quantify variables which can be used as a basis for the pricing of relevant overflowings. In practice there is good reason to dispute Callon's basic premise. This has been abundantly clear in the case of the international system of carbon trading, which has been demonstrably inadequate as a system for reducing the production and release of carbon dioxide into the atmosphere and has been subject to severe academic and civic criticism (Böhm and Dabhi, 2009; Böhm et al, 2012; Lohmann, 2009).

Callon's analysis has already been criticized for its tendency to conceive of overflowing primarily with respect to the frame of the market system. Miller (2002, p.223) has argued that Callon's theory of the market needs to be 'turned the right way up' where the moral economy is not seen as an externality that overflows the market frame but is the focus of the framing itself. Hardt and Nergi (2009, p.283) have commented upon the limitations of the concept of externalities for framing social transactions explaining that, 'Rather than seeing the common in the form of externalities as "missing markets"... we should instead see private property in terms of the "missing common" and "common failures".' Technologies of the commons function by pre-empting the production of unsustainable overflows, rather than by retroactively identifying and measuring such flows after their production as is advocated by Callon's (1998) approach.

The Crisis of the Commons

Ostrom's work regards self-organization within the commons as a part of a 'nested' approach that also includes a role for state regulation and for the market mechanism. Ostrom's conception of the commons situates itself explicitly within the tradition of conservative liberal philosophy developing from thinkers such as Hobbes, Smith, Hamilton and Tocqueville (Ostrom, 1990, p.216). Whilst recognizing an important role for self-organized user groups, its emphasis is on dealing with a limited set of circumstances that cannot be easily solved by the market or the state. Numerous authors have drawn on the idea of the commons to explain the significance of harmful externalities of the prevailing capitalist system and have exploited the democratic and emancipatory potential of forms of commons governance (Federici, 2008; Fraser, 2022; Hardt and Negri 2004, 2009; Linebaugh, 2008; Patel, 2011; Perelman, 2003).

Federici (2008, p.95) has argued that, "Commons are constituted on the basis of social cooperation, relations of reciprocity, and responsibility for the reproduction of the shared wealth, natural or produced". In a similar vein, Hardt and Negri (2009) have developed a conception of the commons which is radically democratic in its organization arguing that participation is itself a form of pedagogy that expands both our productive forces and our capacity for self-rule. They maintain that, 'any attempt at external organization only disrupts and corrupts the process of self-organization already functioning within the multitude' (Hardt and Negri, 2009, p.302). In relation to the knowledge commons, Moten and Harney (2004) have argued that an "undercommons" can be created on the margins of formal institutions, where "maroon communities" can self-organize against the corrupting influence of neoliberal regimes of management and measurement.

The critical economist Stephen Marglin (2008) has pointed out that privatization is frequently rejected as a solution to the allocation of common resources because such a solution destroys many of the social bonds and community values around which the community's life had been traditionally organized. Federici (2018) and

Linebaugh (2012) have both shown that historically liberal capitalist strategies have enclosed the commons at home and abroad by means of violent expropriation of wealth and land from women and indigenous populations. Feminist writers including Federici (2018) and Fraser (2022) have observed that the commons is closely linked to care work and social reproduction more generally. Federeci (2018) explains that, "a feminist perspective on the commons is important because it begins with the realization that, as the primary subjects of reproductive work, historically and in our time, women have depended on access to communal natural resources more than men and have been most penalized by their privatization and most committed to their defense." Fraser (2022) argues that the current crises afflicting many commons are interlinked - ecological, knowledge and education, and health and social care. Fraser (2022) explains how commons provide the conditions of possibility for modern capitalist relations of production, and that corporate capitalism is parasitic upon these commons and "global care chains", at the same time that it depletes and destroys the very conditions upon which it is reliant.

A general feature of all the forms of commons analyzed here is that each can be understood historically as a site of struggle and that they are often associated with local conflicts or broader social struggles (Berry 2008; Federici, 2018; Fraser, 2022; Linebaugh, 2008; Thompson, 1991). A second general feature of the commons concerns the development of alternative forms of governance that move beyond the market mechanism or the state, where the potential of self-organized user communities has been highlighted across a diverse range of domains, including law (Benkler, 2011; Lessig, 2002), computer studies (Berry 2008), political theory (Fraser, 2002; Hardt and Negri, 2009), history (Hill, 2972; Linebaugh, 2008; Thompson, 1991) and environmental studies (Ostrom, 1990; Patel, 2011). A third general characteristic of these diverse forms of commons is that the commons must be actively maintained through the development of 'technologies of the commons,' which vary depending upon the nature of the commons itself.

In summary, this article has attempted to synthesize diverse strands of research into the commons to show how different 'technologies of the commons can be created for the development of alternative non-market institutions of governance. The article has shown how different technologies of the commons can develop grounded - at least in part - on their specific material conditions. This article also argues that we are now facing a crisis of the commons across of range of domains - informational, social and environmental This crisis emerges from intensifying forms of exclusion, exploitation and expropriation of common resources upon which contemporary global capitalism is reliant for its functioning, which is increasingly unsustainable.

The study of technologies of the commons opens up new research questions for organization theory, particularly concerning the ways in which different social movement organizations become organized around such technologies or the extent to which they give birth to new technologies of the commons (Davis et al., 2005; Spicer and Böhm, 2007). Commons based organizations resemble social movement organizations more than they do commercial enterprises (O'Mahony and Bechky, 2008). Lewis Hyde's (2010, p.12) account of the commons has suggested that, 'a number of social movements… have turned to the old idea of "the commons" as a way to approach the collective side to ownership.' Social movement organizations are organized primarily around a collective identity which in many cases is associated with a collectively owned good, as is the case for environmental SMOs, open source communities and health care SMOs. We might thus turn to social movement organizations to better understand where and how technologies of the commons emerge. A promising avenue in this respect has been developed by De Angelis (2012), who has observed that social movements, such as the environmental movement, Via Campesina and the Zapatistas, have emerged to protect various commons, and are also reliant on those commons for their success. De Angelis (2012, p.17) explains that, "Social movements cannot be conceived without a commons basis for the reproduction of the lives of the subjects participating in them as well as the form of their sociality.", and we could add that these movements also create new technologies of the commons to sustain them. Another related avenue of research is to investigate the success of self-organized user groups and the extent to which this success is linked to their creation and exploitation of specific technologies of the commons. Finally, another potential avenue of research opened up by this line of inquiry is to investigate whether technologies of the commons can provide viable non-market alternatives to exploit the benefits or mitigate the harms associated with externalities and present a way of addressing the emerging crisis of the commons. The potential of these kinds of 'technologies of the commons' and their respective limitations is still an open question and could be a fruitful subject of analysis for future research in the field of organization theory and management studies.

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Back to the office? An exploration of post-pandemic work life

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Abstract

The COVID-19 pandemic and its consequences on the way and the space in which work practices are performed. The pandemic has created a huge shift in the way people make sense of what is office space and what it is not. After being forced to work remotely for almost two years, this has become the "new normal", and many workers are trying to find their way back to a balance in which working remotely and working in the office are "in sync". In this essay, the different consequences of this shift will be explored, and the various ways workers make sense of work practices and work space. Moreover, future consequences for both work practices, organizations, and office space will be explored.

Keywords: post-pandemic work life; space; office; work practices

Introduction

Before the COVID-19 pandemic hit the world, workers -mainly freelancers and digital nomads- had discovered how they could create an office just anywhere, as long as they had the right devices and digital technology. As Hatuka & Toch propose (2016) any place could be formed into a "portable private-personal territory" (PPPT), and just by performing work practices, a space not designed as a coworking place, could be transformed into an "unintended" coworking space. Where the "working anywhere"-movement started at coffeeshops like Starbucks (Simon, 2009), soon mobile workers, or so-called "urban digital nomads" started to create work spaces in places such as museum café's and hotel lobbies. (Brakel-Ahmed, 2021)

At the same time, employees of firms, slowly got more possibilities to work remotely since the late 90s, even though most managers would ask employees to be in the office on most working days. Offices are being built with flexible spaces in large open floor plans. The idea is to stimulate creative discussions, having access to a colleague for face-to-face contact more easily, and consolidating colleague-to-colleague work relationships (Suckley & Nicholson, 2018). Moreover, this is an efficient way of designing office space, and saving money as space is being utilized up to the last square meter. In some firms, the trend is to have different kinds of spaces in order to create ideal work spaces for different tasks, coined by Veldhoen (2008) as Activity Based Working (ABW). Tasks where workers need to concentrate are closed off cubicles without stimuli, yet for creative thinking the space is more "playful" (Suckley & Nicholson, 2018).

When the COVID-19 pandemic hit in 2020, there was a radical change. The concept of working remotely was fast-forwarded and legitimated. The world changed into a large field lab experiment. All (knowledge) workers, both self-employed as employees, were bound to their home office, and online meetings took a giant leap. As the pandemic was ongoing for two years, workers got used to working remotely. It became the "new normal", and starters in the job market do not even know better than working remotely being the norm.

At present, just before 2023, as the pandemic seems to be nearing an end, workers are returning to the office, and every firm is trying to grapple with returning back to "a post-pandemic normal" (Howell, 2022; Garzillo, 2022; Crawford, 2022). Some firms want employees to be back in the office fully, others are more flexible and some firms even encourage working remotely 100% and employ new people no matter where they live.

There are consequences for both organizations and workers in the post-pandemic era. In the next section, these will be explored.

1. Consequences for workers and organizations

There has been a major mind shift, due to the "intervention" the pandemic caused. Whether organizations and workers liked it or not: work was performed remotely. After having lived through this situation for more than two years, what consequences does this have on the way employees think about and make sense of (the possibility of) working remotely? And what does it mean for organizations?

There is a big diversity in how workers perceive and make sense of remote working. Some workers thrive on remote working and "never" want to go back to the office again (Kelly, 2022; Malinsky, 2022). The fact that they can plan their days as they wish, and do household tasks, care tasks for children, family and/or pets during working house can be very attractive to some workers. Moreover, all the time commuting to and from the office has disappeared.
Even though this seems positive and partly is, working remotely does have organizational and societal consequences. As there is no boundary between work and private space, it is harder than ever to separate private life

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from work life, and private self from work self. The time commuting to and from the office could be seen as a liminal space and time in which workers "transition" from work self to private self, work space to private space and vice versa. The spatial and temporal "unwinding" has disappeared, which could cause stress (Felstead & Henseke, 2017; Palumbo, 2020; Peters, et al., 2009).

For some workers, working in the same context and space is too stressful and confusing, in particular the recurrent move from bed to computer screen every morning and the intensity of new immobilities at home (de Vaujany, 2022). They prefer going to the office to be able to be productive, meet colleagues and go through the performance rituals of work.

Most employers want their employees back at the office. Around 66 % (Malinsky, 2022) of European employers want their employees back at the office. This sometimes even leads to a "battle" between employers and employees (Kelly, 2022) Who "wins" the battle or what future scenarios will bring, are very much dependent on the state of the economy, and the job market.

Moreover, it will take some time for the "new post-Covid-situation" to find a balance, and get more reliable statistics on remote working.

Regardless of the worker's or employer's preferences to be physically present in an office space and place, the notion of (lack of) togetherness is an important factor. As previous studies have shown, the fact of being together in an office space enhances informal interaction. Important physical spaces for informal interaction are e.g. the lunch room, the water-cooler/coffee machine, photocopier. Fayard and Weeks (2007) found that objects such as photocopiers and water-coolers *afford* informal interaction. As the workers get something to drink, or make photocopies, they are in a tiny timespan of liminality in which they interact with co-workers. They tend to strike up an informal conversation, which could involve both private life as work-related themes. Informal talks and seemingly unimportant conversations about work do not only have a function of bonding with one another, but also create more organizational commitment towards the organization. Fayard and Weeks (2007) mention workers going to the photocopier on purpose just for the sake of some social interaction. The importance of these small physical encounters are often overlooked and underestimated in relation to remote or hybrid working. Before the pandemic, remote working was usually limited to a maximum of a day or two per week. However, in the post-pandemic era, it is not uncommon to work remotely fully, or at least the majority of the week. This has many consequences for workers and their relationship with the organization and each other.

It should not be underestimated how important physical closeness in the same space is to keep the organization and its culture strong. When work is just reduced to performing a profession from a home office or any other remote space, the worker is just a professional, performing tasks that could also be performed for any other company with other colleagues. When work is just reduced to performing tasks, regardless of the organization and co-workers, the way the organizational culture weaves the workers, goals and firm into one "family of workers" becomes highly problematic.

A lack of physical proximity and hence (often) a weak organizational culture have an effect on how workers feel committed to the organization and toward each other. When people do not know each other and perhaps even have never met face-to-face, there is no basis to trust the other person (Fayard & Weeks, 2007). This has consequences for knowledge sharing, as workers are just "performing their professional tasks" remotely. Knowledge, then, will not be used constructively to -as a team- make the organization a huge success. The post-pandemic organization, metaphorically speaking, would just be a large machine where workers are just "cogs in a machine" that do not care about the end result, just that their own tasks are performed well.

Besides feeling less committed and inducing a weaker organizational culture, the lack of physical proximity has some negative consequences that should be taken into consideration, especially when work is performed by knowledge workers and requires teamwork and innovation to achieve success. The lack of physical proximity makes it difficult to build trust through personal connection. This has a negative impact on teamwork and innovations. Moreover, the chance encounters in the office space are a rich source of innovation (Fayard & Weeks, 2007; Fayard & Weeks, 2014).

For the organization, the consequences of workers feeling less connected leads to a diminished organizational commitment and identification. The turnover will be higher which makes the organization will lose money, valuable knowledge and networks. An organization can grow and thrive when workers trust one another and want to create the best for the organization. Yet as stated earlier, in a situation where physical proximity is lacking, trust, commitment, informal conversation, creativity and innovation diminish.

Concludingly, it seems that (almost) fully remote working has consequences for both workers and organizations. The lack of physical proximity makes the worker feel like a professional just performing tasks for a "random" organization without feeling part of a "family". Moreover, the blurred boundaries between work space and private space can create feelings of loneliness, stress and alienation. Contact with co-workers is more impersonal with physical distance, which is not conducive to building trust, personal work relationships and facilitating chance encounters that lead to bonding and are a source of innovation. For organizations this means that the organizational culture and commitment are weaker, and ultimately this leads to less innovation and a higher turnover.

2. Consequences for society

Digital technology and the imposed remote working during the pandemic have opened up many possibilities for workers (Aroles, de Vaujany, & Dale, 2021). It is however important to consider the consequences for workers and organizations in the mid- and long term. Ultimately, these consequences will have an impact on society as a whole.

Not meeting colleagues face-to-face, going through the rituals of being in the office, having lunch, coffee and drinks with colleagues has an impact on the organizational commitment and organizational identification. As mentioned earlier, workers almost feel like self-employed actors that perform work activities for a certain firm, but it could be any other firm with the same job description. This has severe consequences for loyalty towards the organization, as workers my hop from one job to another if work conditions and pay are better. Another consequence is that the organizational identity becomes weak, and workers do not feel part of the organization, but rather an "intrapreneur" within the organization.

For organizations the post-pandemic has taken New Ways of Working to a different level. Workers feel less committed and more empowered. Possibilities have opened up to work from anywhere and for any organization. Whatever glue has been keeping workers from being "stuck" in an organization, such at the office, the affectional organizational commitment, not realizing a much broader scope of possibilities of when and where to work, it is now being questioned critically. Where even before the pandemic workers would not always feel appreciated and acknowledged by their managers, the pandemic seems to have acerbated this feeling of not being valued (Formica & Sfodera, 2022; Hartner, 2022). The way workers connect to their colleagues, their employers and their jobs, is one of the important pillars in how they place themselves in society.

The post-pandemic New Ways of Working have consequences for society. The concept of Working Alone Together (Spinuzzi, 2012) now does not only concern mainly self-employed people, but also employees of organizations. The speed of digital technology offering possibilities to work from anywhere and use videoconferencing software to connect with co-workers has surpassed the time, space and need to investigate and reflect upon the consequences for society. Paradoxically, the world has become bigger as we can communicate online either in real time or in an asynchronous manner. Hatuka and Toch (2016) state that we are in are in our "portable private personal territories (PPPT's)". The authors see the PPPT as a social and not a physical territory, but as "*a social condition that comes into being by the individual in a space*" (Hatuka & Toch, 2016:2203). This implies that the physical space is inhabited by people in their own individual virtual, social bubbles.

Quite paradoxically, digital technologies and the possibilities they have created to work remotely, has in fact made our worlds and sense of community smaller. The importance of physical proximity and the affect it has on bonds of trust and connection is overlooked and underestimated (Fayard & Weeks, 2007). The increased use of online communication has created individuals in a liquid society (Bauman, 2013), engaging in online communication whenever they please and with whomever they choose to virtually interact with. The connection is there, but the depth and intensity of Face-to-Face conversation with its nuances in tone, body language and facial expressions are missing. The is results in a loss of sense of community, solidarity, trust and belonging. It is crucial to investigate these consequences as, despite the fast developments in digital technology and all the opportunities it creates, we, as humans, are biologically made to connect and feel that we belong to a community (Mellor, et al., 2008; Baumeister & Leary, 2017).

Conclusion

The fast development of (digital) technology has increased mobility and possibilities to work from anywhere. Remote working took a giant step during the pandemic. Work time, place and space has become liquid. Even though it offers many possibilities, it is important not to lose sight of the consequences it has on organizations, workers and ultimately society.

As stated earlier in this essay, when workers do not feel any specific organizational commitment, and work as if they are cogs in a machine, they tend to only perform their own tasks without looking at (or caring for) the whole picture. As managers do not see or know their

employees that well, it is easier to overlook or not acknowledge hard work. There is a tendency toward "quiet quitting", where workers consciously just perform the tasks they have to do, but not go the extra mile (Formica & Sfodera, 2022). This has partly to do with creating more private time and avoiding overwork and stress, but at the root of this limited commitment lies the post-pandemic loosely weaven organization: The workers feel like cogs in a machine, performing just their own tasks, whilst being overlooked by managers that are less likely to acknowledge their efforts (Harter, 2022). The perception of alienation at work can result in a feeling of not belonging to a community, and part of society (Hafermalz & Riemer, 2021). It makes people behave like individual rather than citizens of a society.

This essay is by no means a manifesto stating that work should only be performed in a physical office with all employees being present at all (working) hours. It is, however, an attempt to point out the consequences of a very loosely woven organization. Ultimately the concerns raised affect our whole society, as people are searching for a sense of purpose and belonging. (Work)relationships, the purpose of work, work-life balance and finding a sense of meaning at work and as a result thereof, in society.

The lack of a sense of belonging, trust, connection and being part of a community can have consequences in how our society is woven together. Being aware of both the possibilities and opportunities that digital technologies bring, and of our biological needs to be part of society could be helpful in making sense of our post-modern liquid society. After all, we are herd animals that have an inherent need to belong to a community.

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Managing Knowledge Commons in a Connected World: An Organizational Perspective

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Abstract

The literature about commons is now abundant, in particular in economy, sociology and more and more, in management. In this article, I try to shed light on a neglected issue: the organizational nature of commons in a connected world. Commons, in particular knowledge commons, have an organizationality. They are and need to be organized. They keep becoming more and more open, and experience specific organizing processes. But what is changed when individuals are institutionally connected far beyond the time-space of their activities? What is transformed in communalization processes by the hyperconnectivity of our technologies and our societies?

Keywords: commons; knowledge; organization; organizing; connectivity; hyperconnectivity.

Introduction

Specific practices are often called to foster adaptation to a complex and uncertain world, e.g., agility and education to agility, openness to creativity, active development of organizational learning or adoption of system thinking (see Argyris, 1993; Nonaka, 1991 or Senge, 2006). The bulk of this adaptative invitations converge in their stress on organizational learning or the organizationality of learning (Hällgren *et al.* 2018). Resources need to be allocated, roles need to be defined, rhythms and temporalities need to be elaborated so as structure the new collective knowledge underpinning new organizational dynamics. Indeed, commons, as material facilities, are often interwoven with knowledge commons, the latter enabling the former. Knowing together is required to act together and vice versa (Cook and Brown, 1999). For long, management and organization scholars have been aware of this issue. Knowledge management became a research subject in the 1990s, beginning with Nonaka and Takeuchi's (1995) work on the dynamics of the learning organization and expanding later with the literature about communities of practices (Lave & Wenger, 1991; Wenger, 1998; Brown & Duguid, 1991). Organizational learning results in part from the social interactions that occur in the workplace (Brown and Duguid, 1998). Learning is then thought of as a process aimed at developing contextualized (in adequacy with a specific context) and operational ("actionable" according to the term of Chris Argyris; 1995) knowledge. Lave & Wenger (1991) speak of situated learning which is based on collaboration, observation and imitation in order to produce knowledge to solve problems. Some authors even consider that the existence of organizations can be explained by their ability to grasp, synergize, and make use of knowledge, something that the market would be unable to do efficiently (Benkler, 2002; Brown & Duguid, 1991).

Many authors (Hess & Ostrom, 2011; Benkler, 2002; Rifkin, 2014) have demonstrated that knowledge strongly benefits from being produced and organized collectively in accordance with the principle of the commons as theorized by Elinor Ostrom (1990). Collective practice and knowing are entangled. Indeed, knowledge grows when it is shared and socialized. The particularity of knowledge is that it is a non-rival good (its individual use does not prevent its simultaneous use by others) that fuels innovation (technical progress), work productivity (Powell & Snellman, 2004), and growth (Romer, 1986, 1994). Knowledge is at the heart of communalization process. It is the epitome of it.

This phenomenon has obvious institutional and societal dimensions. While the world has become more complex and uncertain, the "Internet Galaxy" (Castells, 2002) contributes to both the acceleration of changes and their regulation. Indeed, the production and management of knowledge has been deeply transformed by the constantly more distributive and accessible character of knowledge thanks to the Internet (Benkler, 2006). Wikipedia, Creative Commons licenses (Lessig, 2004), and Open Access culture (Suber, 2012) all illustrate the creative and transformative potential of the participatory culture associated with the Internet (Benkler, 2002, 2011). In organization and society at large, open access to knowledge promotes collaboration, sharing, and exchange; further, it nourishes creativity, democratizes innovation (Hippel, 2005), and facilitates adaptation to the upsets of a complex world. On that note, the central question facing organizations is: how to produce and manage knowledge as efficiently as possible in a hyperconnected world? What is changed by the institutional connectivity of our world in the process of knowledge communalization?

1. Knowledge as a commons

Before exploring further the commonality of knowledge, it worth noting the relevance of the concept of commons for knowledge production in organizational contexts (Fournier, 2013). The collaborative culture associated with the Internet stems from its academic origins (Castells,

[14] Sciences Po Lyon – Laboratoire MAGELLAN - EA 3713 - iaelyon School of Management

2002) and from the Open Access culture more generally. Both are part of a scientific imprint still guiding Internet practices. While this cultural characteristic was not alone in contributing to the creation of Internet culture, it does constitute a major foundation according to Castells (2002). As such, the collective/collaborative production of content —of which Wikipedia or Linux are emblematic (Tapscott & Williams, 2008)— has been seeping into organizations, if only by way of generational effect (generation Y) (Palfrey & Gasser, 2008), and thus contributing to the construction of a collective, adaptive, and creative collective intelligence (Woolley et al., 2010).

These collaborative practices (Linux, Wikipedia, etc.) can be characterized by the concept of commons — a concept that has the merit of referring to a shared imaginary situated far beyond the usual market and state regulations (Bollier & Helfrich, 2014; Coriat, 2015; Dardot & Laval, 2014; Hardt & Negri, 2009). The commons' imaginary has been explored in great depth, notably by the Nobel Prize economist Elinor Ostrom (1990). The development of the Internet has enabled an exponential growth of the digital commons (Benkler, 2002, 2006; Bollier, 2011; Hess & Ostrom, 2011; Lessig, 2004), which has in turn permitted a reflexive consideration of the production of collaborative knowledge: "In one sense, this is simply a rediscovery of the social foundations that have always supported science, academic research, and creativity" (Bollier, 2011, p. 36).

The concept of the commons was first employed to speak of common-pool resources that require collective management (Ostrom, 1990) or else risk facing "the tragedy of the commons" (Hardin, 1968) —that is to say, excessive exploitation of a common good (e.g., fish stock) for private purposes according to the well-known logic of the free rider (Olson, 1965; Lorino, 2022). It is important to underscore that a common-pool resource only becomes a commons once a communal management of the resource has been put into place (see Ostrom 2005, pp. 258-269). Commons, thus, must be governed. Conversely, a common-pool resource can exist through a bundle of rights without implying communal governance (the climate is a common-pool resource but not a commons). By extension, a public good governed communally becomes a commons, as is the case of Wikipedia or Linux, both of which are knowledge commons (Bollier, 2011, p.28; Coriat, 2015).

After the first works on the commons, which date back to the late 1970s and which focus on the management of rare resources (Ostrom & Ostrom, 1977), the idea of the commons was reinvented, around culture (Bertacchini et al., 2012), the use of the Internet (Benkler, 1997), and knowledge (Hess & Ostrom, 2011).

Empirical studies on the governance of communal resources have allowed for the establishment of operating principles that facilitate the perpetuation of communal governance (and thus enable the protection of common resources). These principles do not automatically imply the success of a communal governance, but they have been identified in all instances of success. The principles are as follows (Ostrom, 1990, pp. 90-102; Ostrom 2005, pp. 258-269):

1. The limits of the common good are clearly defined; the access rights to the common good are clear.
2. The rules governing the use of the common good are adapted to local needs and conditions (for example, in relationship to the good's availability).
3. A system allowing individuals to participate in the definition and modification of these rules on a regular basis has been established.
4. A system for community members to self-check their behaviors has been established.
5. A graduated system of sanctions for those who violate the community's rules is provided for.
6. An inexpensive conflict resolution system is available to community members.
7. The community's right to define its own rules of operation is recognized by external authorities.
8. When applicable (such as for a common good that exists across borders or a common good assigned to a range of territorial levels), the organization of decision-making can be established at several levels while respecting the rules set out above.

A central point in the works of Elinor Ostrom is to demonstrate that the commons are resources subject to social dilemmas: should we consume the resource without measuring its use and risk its disappearance or should we manage it communally and reduce our use of it? Interactions between people can have positive, negative, or nuanced effects on the future of the common resource. As such, the existence of a common-pool resource does not necessarily imply a communal governance of the resource. Privatization constitutes a constant threat to communal resources. As the global economy rests largely on the production and distribution of knowledge, there is a strong temptation to appropriate collaboratively produced knowledge for one's own personal gain. This explains movements such as Free Software[15], Open Access (Suber, 2012), and Creative Commons licenses (Lessig, 2004), which seek to make the resource communal, a commons — that is to say, a good that is communally managed in order to prevent its private appropriation. Indeed, the more the knowledge resource is shared, the

[15] https://www.gnu.org/philosophy/philosophy.en.html

more it develops and advances. This sharing is made much easier by information and communication technologies, which bring the cost of sharing to nearly nothing (Rifkin, 2014). The Internet allows for free access to nearly all digital productions (of knowledge in particular) and in doing so democratizes creativity (Anderson, 2012).

These collaborative practices obviously create value for society. The Free Software movement is at the forefront of the communal production of value for the benefit of all, treating knowledge as a communally managed good. The Linux operating system, the Firefox web browser, the Arduino microcontroller, and the Wikipedia encyclopedia are all innovations brought about by distributed and democratized development (Rifkin, 2014; Tapscott & Williams, 2008; von Hippel, 2005).

These collaborative, transformative practices do not function without rules. Yet, to face changes in the environment, the collaborative construction of knowledge within organizations requires cooperative work practices that are rather incompatible with rigidly hierarchical organizational forms. Thus, knowledge conceived as commons (Hess & Ostrom, 2011; Ostrom, 1990) throws into question the modes of managing organizations in a hyperconnected world where knowledge is a source of creativity and innovation that enables adaptation to a complex and volatile environment.

2. From knowledge as commons to organization as commons in a hyperconnected world

Internet has made the production and dissemination of knowledge easier. It has involved, as well, the implementation of a digital commons (Benkler, 2006; Lessig, 2004) to control the potential privatization of this knowledge.

If we agree that the principal reason for the existence of an organization is, much more than the reduction of transaction costs (Coase, 1937), the production of knowledge (to provide answers to the constant changes of a complex environment), then an organization would do best to operate as a commons, which is the organizational form best adapted to creating knowledge — especially in the era of digital networks of knowledge distribution. Indeed, collaborative governance enables firms to operate like learning organizations (Argyris, 1993; Nonaka & Takeuchi, 1995; Senge, 2006), which leads to a continuous production of knowledge to adapt to the environment. Moreover, by situating workers at the heart of its strategy, the learning organization promotes the implementation of a meaningful professional environment (close to the concept of sensemaking – Weick, 1993) based on trust and autonomy. The result is greater satisfaction in the workplace, and thus greater productivity, worker creativity, and profitability for the organization (Senge, 2006).

Learning organizational processes can operate in many ways; using the commons (rather than a common good or a common-pool resource) as an interpretive framework (as Ostrom encourages us – Ostrom, 2005) allows us to find some unifying principles: collaborative functioning as a group, decision-making deliberation (consensual and/or democratic), autonomy, shared objectives and trust. Here are some examples:

- Considering an organization as a collaboratively managed commons is nothing new; worker cooperatives (Boudes, 2017), for example, operate along these lines. The International Co-operative Alliance sets out the movement's values thusly: "A cooperative is an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise[16]". These values are implemented according to seven principles[17] , most of which are comparable to those implemented in the management of commons: 1) voluntary and open membership; 2) democratic member control; 3) member economic participation; 4). autonomy and independence; 5) education, training, and information; 6) co-operation among co-operatives; and 7) concern for community. As of 2018, there are over 3 millions cooperatives in the world (Karakas, 2019). Communal governance, then, is far from marginal.
- Agile management can also be understood within the framework of the commons. The agile methods initially conceived in the context of producing software (Schwaber & Beedle, 2001) have been formalized in a manifesto: *The Manifesto for Agile Software Development*, also called *The Agile Manifesto* (Beck et al., 2001). The manifesto sets forth very pragmatic ways of guiding collaborative work toward customer satisfaction (which also plays a part in the collaboration) through the iterative and incremental production of tangible results. The team's operations are based on autonomy, trust, and constant self-regulation. This approach, which relies on flexibility and the acceptance of change, has long since spread beyond the field of software production. Here again, the team functions like a commons, taking care to manage a common resource (the project) by building

[16] http://ica.coop/en/whats-co-op/co-operative-identity-values-principles

[17] http://ica.coop/en/whats-co-op/co-operative-identity-values-principles

its own rules based on collaboration, exchange, transparency, autonomy, and trust.

Governing the organization like a commons is not the prerogative of technology companies practicing so-called "agile management" (Holbeche, 2015). It is also practiced by industrial firms such as FAVI, Harley Davidson, and Gore (Carney & Getz, 2009), for whom knowledge is a common good shared in such a way as to enable quick reaction, anticipation, adaptation, and innovation. The company FAVI (Fonderie et Ateliers du Vimeu [Foundry and Workshops from Vimeu]), which has manufactured copper siphons, water meters, and gearbox forks in France for some fifty years, has implemented an original organizational model that combines creativity and quality. Under the leadership of its director Jean-François Zobrist, FAVI gradually transformed itself from a hierarchical, Tayloristic organization based on control to a firm self-managed by employees, based on trust, autonomy, and personal commitment. The firm's activities were divided up into some fifteen "mini-factories" composed of 10 to 40 people, with each group dedicated to a client and self-organized (Carney & Getz, 2009). A strong customer-oriented stance gave FAVI employees a common project. Employees visit customers on a regular basis to observe how the products they manufacture are being used; this gives the workers a real knowledge of their customers' needs and enables them to make constant improvements (*Kaizen*) (Imai, 1986). This mode of management — which Jean-François Zobrist (2013) says begins with the idea that "man is good" — promotes both the quality of life at work and good economic results (40% of sales for export, 3% growth per year in an extremely competitive sector). The firm managed as a commons facilitates the creation of common knowledge, which has a positive impact on its results.

These different (Western) approaches to thinking of organizations as commons are in line with the works of MIT Sloan School of Management professor Douglas M. McGregor (1960). Influenced by Abraham Maslow's (1954) work on the factors that motivate human behavior, and also following Mayo (1933) and works from the human relations movement, McGregor highlights that it is possible (and even desirable) to trust in employees (a stance in opposition to the dominant theory of organizations (Taylor, 1911) because they seek fulfillment through their work. Betting on workers' intrinsic motivation to give their work meaning (Ryan & Deci, 2000) is a characteristic feature of how commons work. Each individual is aware of the meanings of their actions, of their place in the collective (and the importance of this awareness is a bulwark against free rider behavior; Olson, 1965).

It is worth noting that other forms of commons exist in different cultural contexts, though they too originate in the desire to create knowledge so as to adapt to an uncertain environment. Take for example the case of Eisai, the 4th biggest pharmaceutical laboratory in Japan, which was studied by Takeuchi, Nonaka & Yamazaki (2011). In 1988, Haruto Naito, the CEO of Eisai, sought to find a way to promote both innovation and the common good. Eisai began to implement a knowledge management policy that aimed to create knowledge through collaborations between lab employees and patients they met in hospitals, nursing homes, etc. This approach is based on the idea of grasping tacit knowledge according to the principle of socialization developed by Nonaka (1991, 1994).

To complete this vision of a knowledge-creating firm (Nonaka & Takeuchi, 1995), Nonaka and Konno (1998) identify a privileged space intended for discussion, called *Ba*, where a shared culture based on trust and empathy emerges. *Ba* is a source of mutual enrichment by way of reciprocal attentiveness and respect of others' differences and viewpoints. This quest for consensus in goodwill, which begins from a point of different or even divergent opinions, enables innovative knowledge to emerge in a collegial fashion. *Ba* also acts very concretely as a knowledge commons. By practicing knowledge management (by creating this commons), Eisai develops each individual's commitment to their work and gives meaning to this work, which contributes to positive economic results (Takeuchi, Nonaka, & Yamazaki, 2011). Indeed, the firm is attentive to its environment, with each employee acting as a sensor. The sharing of individual knowledge leads to a communal, collective knowledge that is greater than the sum of its parts.

Conclusions: openness and connectivity on the way to organizational commons

Building knowledge collaboratively appears indispensable to adapt to the rapid changes in our environment. Further, following Hess & Ostrom (2011) this knowledge should be considered as a common good in a collective driven by the principles of reciprocity, autonomy, transparency, and trust. It seems that such an approach is made possible by a view of organizations that focuses on individuals — in particular, on their freedom, their responsibility, and their well-being at work (along the lines of Mayo, 1933, and McGregor, 1960).

In this context, the organization is conceived of as a commons whose sustainability depends on collaborative knowledge management (or as Nonaka, 1991, formulates it, knowledge creation), itself conceived of as a commons. The collective intelligence that emerges from the sharing of knowledge presupposes a large variety of profiles

among commoners as well as truly independent thought. Today, these individual profiles are more and more hyperconnected, which facilitate the ability to freely exchange ideas (so as to build common knowledge that takes into account various points of view). Of course, it should go hand-in-hand with a benevolent professional environment (Duhigg, 2016) where it is possible to express oneself freely. Conversation, as it has been used by philosophers since Plato, enables learning through the confrontation of ideas in a radically open and unexpected way (because of the hyperconnectivity of individuals). In brief, it is a matter of presenting explicit inferences that other members of the organization may attempt to refute[18] — according to a principle of discussion which seeks a solution that will be accepted by all (Habermas, 1994) — through an informed dialogue fed by contradictions (Argyris, 1993; Habermas, 1994; Morin, 2008). Combining an approach to knowledge as a commons with an organization that operates as a commons enables organizational learning (Argyris, 1993; Senge, 2006), which in turn enables adaptation to a changing, hyperconnected world.

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[18] This relates to the principle of falsifiability that underpins the scientific approach as according to Popper (2002).

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