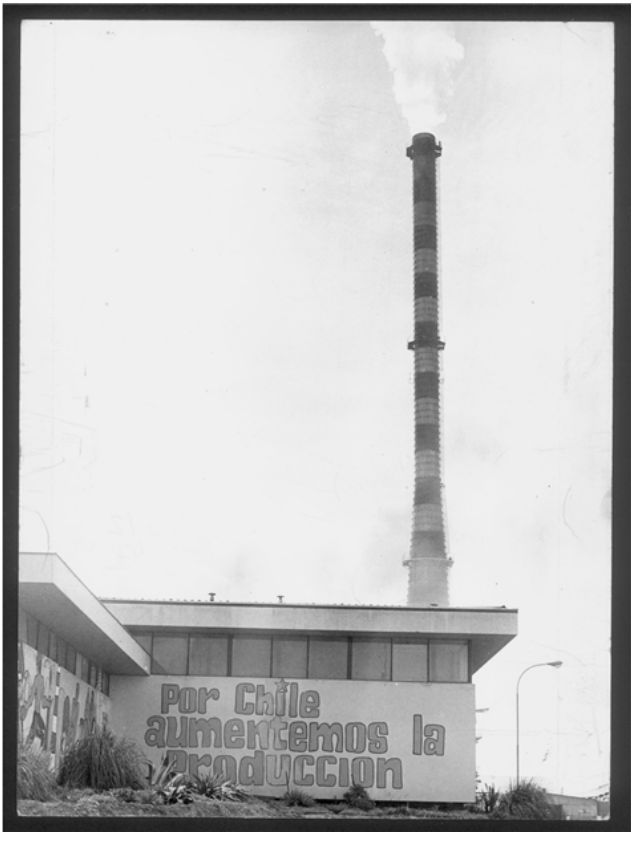
Perfiles Económicos

REVISTA SEMESTRAL Nº13 DICIEMBRE 2022 e-ISSN 0719-7586



Universidad de Valparaíso
CHILE

ESCUELA DE
INGENIERÍA COMERCIAL

PERFILES ECONÓMICOS Nº13 DICIEMBRE 2022 e-ISSN 0719-7586

Revista semestral publicada por la Escuela de Ingeniería Comercial UV

La revista *Perfiles Económicos* es una publicación, arbitrada y de acceso abierto, de la Escuela de Ingeniería Comercial de la Universidad de Valparaíso, que tiene como propósito dar a conocer los avances de la investigación económica en sus diferentes perspectivas. La publicación incluye los problemas teóricos, metodológicos y analíticos de áreas tan relevantes como: pensamiento económico, historia económica, finanzas, innovación, política económica, medio ambiente, desarrollo sustentable, globalización económica y regionalización. El ámbito geográfico de sus artículos lo constituyen, preferentemente, la realidad de Iberoamérica, así como aquellas áreas, más amplias, que se vinculan con la anterior.

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ISSN 0719-756X (versión impresa)
e-ISSN 0719-7586 (versión en línea)

La revista *Perfiles Económicos* está incluida en el directorio Latindex y Latinoamericana.

Contenido

Presentación

Bridges to sustainability: dialogues between economy, ecology, and politics

Puentes hacia la sostenibilidad: diálogos entre economía, ecología y política

The *Revista Perfiles Económicos* (Journal of Economic Profiles) promotes the perspective of an inclusive and transdisciplinary economy that can contribute to the social, political, and environmental challenges we must urgently address. In the last decades we have seen neoclassical quantitative approaches clashing with emerging critical perspectives within the discipline -e.g., feminist economics, ecological economics, degrowth- and others in the broad field of social sciences -e.g., political ecology, eco-feminism - that lay bare the limitations of the former to explain economic phenomena. Consequently, there is currently a growing heterogeneity of approaches that provide alternative analytical frameworks to understand political-economic dynamics, bringing rich insights into the debate. Arguably, what they all have in common is the realization that economy as a discipline should not be a science of the market but of the whole productive and reproductive processes that are involved in the satisfaction of material and immaterial human needs.

In this context, the aim the dossier is to present theoretical research that look at topics within the field of sustainability, where economy, ecology, and politics intersect. However, its novelty lies less in the proposal of a dialogue between different disciplines than in the integration of actors that are traditionally dismissed from academic debates. Indeed, we believe important to democratize these spaces by providing a platform to share knowledge done by students, and this time the opportunity was open to master students either enrolled in the program of Sustainable Development or in programs sharing courses with the latter at the Catholic University of Leuven, Belgium (KU Leuven). Moreover, this endeavor entailed a collaboration between students and professors, authors of this brief introduction, showing a commitment with young researchers doing their first steps in scientific research.

One could reasonably ask, what can students from a European university add to a Chilean Journal that mainly deals with research coming from, and related with, Latin American contexts. And the answer is simple: expand our perspectives and build bridges between regions to address global challenges. In a capitalist world-system where political-economic structures systematically outshine nations in their path towards 'development', it will be hard to overcome inequalities if we don't share a common analysis on the roots of the issue. And the global environmental crises we face today provide a great opportunity to highlight the vulnerable nature of the human existence, the flaws of our democracies, and the possible pathways that can be opened if solidarity overrules competition. Besides, the international character of the KU Leuven program enabled us to be introduced to research from authors of different regions of the world and looking at diverse problematics, from the local to the global scale.

The present dossier is composed by four papers that delve into topics like social innovation, hegemonic masculinity, epistemic coloniality, the commons, socio-environmental conflicts, among others. The geographies of the cases analyzed range from southern Europe to the Andean region in Latin America, and from urban

to rural struggles and their interdependencies, often zooming in local dynamics that are inexorably related with regional and global trajectories.

The paper of Irene Platarrueda entitled "*Community Aqueducts in Colombia and their struggle for legal recognition: a political ecology approach*" introduces an ancient communitarian practice for water provisioning in rural territories but also in the urban peripheries, threatened by neoliberal legal frameworks that are forcing them to comply with logics of accountancy and business efficiency. Departing from a Latin American political ecology perspective, she highlights the latter as a field of knowledge that is able to study autonomously the regional realities and transform them, sitting aside from hegemonic development models and epistemic traditions. This approach allows to capture the particularities of human-nature relations within local communities through the concept of territory, and the relational nature of water management through the concept of the hydrosocial cycle. The paper explores how the neoliberal hegemony seeks to expand its dominance and provides insights to understand the strategies that local people display to contest threats of dispossession both materially and discursively. Overall, community aqueducts present an economic model for self-managing a vital common resource that might inspire sustainable solutions for water crisis in the region and beyond.

Vittorio Bellotto's paper "*Resisting urban neoliberalism through social innovation: the case of Italian Centri Sociali*" sheds light on the role of social centres in creating common spaces of political, cultural, and social aggregation. Italian *Centri Sociali* are self-managed spaces that resulted from the social and economic crisis of the 1970s, linked to the transition from Fordism to flexible accumulation. They are not to be considered merely physical spaces but rather a left-wing radical praxis that aims at the re-appropriation of urban space against commodification and privatization. Their structure is most often characterised by horizontality in decision making and it is organised on a voluntary basis. Moreover, they can be unified by recurrent themes, such as the fight against any form of racism

and fascism, the defence of workers' and students' rights, along with feminism, anticapitalism, and environmentalism theories, to name a few.

Using the Social Innovation theoretical approach, this paper assess how *Centri Sociali* respond to the collective improvement of deprived communities. They do so by: (1) addressing unmet needs of a group or community operating in peripheric and marginalised city districts, often inhabited by low-income households ignored by the neoliberal city; (2) employing alternative forms of governance, based on self-management, horizontality, and bottom-up dynamics; (3) fostering the collective empowerment that enables sustained socio-spatial transformations at the grassroots level. Under this perspective, *Centri Sociali* represent spaces of aggregation where individuals can shape together an alternative future based on collective popular organization.

The two following papers deal with certain plant species which are being manipulated according to their market profitability, while reproducing unequal political, cultural, and social dynamics. In "*Exploring the reasons behind Belgian prohibition of the commercialization of the plant Artemisia annua"* Marie-Mathilde Vandenshrick develops a critical analysis on the prohibition of the Artemisia *annua* tea infusion to cure the malaria disease (in favor of a standardized conventional therapy), mobilizing three concepts: epistemic coloniality, technocracy, and commodification of nature. First, she explores how power/knowledge relations are at work when the Western scientific canon renders invisible alternative forms of knowledge, in this case applied to medical traditional treatments. Further, she problematizes the conflicts of interest between pharmaceutic companies and the World Health Organization (and its member countries), uncovering the not-neutral character of technocratic regimes when dealing with heath public policies. Finally, she discusses the process of commodification of nature as inherently profit-driven, providing a third argument to explain why the alternative tea infusion, more accessible and with centuries of practical success, has not entered the market. The call is therefore to

reflect on the businesses behind diseases, the patient-client dialectic, and the capacities of public health systems to remain clean in front of the drug of money.

Finally, Mary Hogan's paper "*Superplants: hegemonic masculinities holding up the green transition*" explores the patriarchal and anthropogenic character of a novel biotechnology: agromining. The use of plants to mine metals and potentially restore chemically eroded soils seems like an interesting mechanism to move on from extractivist activities. However, appealing to 'superplants' developed by white Western scientists to 'save the planet' reinforces the anthropocentric rationality that humans are separated and somewhere above nature, a logic that took us to the present ecological crises. Combining conceptual elements from Feminist, Queer, and Political theories, she dissects the emerging popular discourse supporting agromining through three critical arguments: (1) the reproduction of hegemonic masculinities with another attempt of controlling nature through science; (2) the narrow political space for alternative voices that also have strong arguments to refuse the 'gifts' of technological innovation, and (3) the difficulties of mobilizing such demands in a context of climate crisis where politics is often considered as a limitation to advance (dominant) green solutions.

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https://doi.org/10.22370/pe.2022.13.3445

Community aqueducts in Colombia and their struggle for legal recognition: a political ecology approach

Acueductos comunitarios en Colombia y su lucha por el reconocimiento jurídico: un enfoque de ecología política

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Abstract
In Colombia there are thousands of community aqueducts that supply water to remote rural communities and peripheral urban settlements. These community aqueducts have united in a National Network to fight for legal recognition and support, since Colombia's neoliberal policies don't acknowledge their communitarian nature and have imposed legal requirements that push them towards privatization. Departing from a Latin American political ecology perspective, the paper discusses how this struggle is part of a broader regional movement in which a different rationality between humans and nature, not mediated by economic interests, is fighting to survive and advance in contestation to the hegemonic capitalist model. I argue that community aqueducts put in practice the defense of water as a common in an autonomous exercise of governance that contributes to the construction of territories in Latin America.
Keywords: community aqueducts, water conflict, territory, political ecology.
JEL: I31, L31, P48, Q01, Q25, Q57.

Resumen
En Colombia existen miles de acueductos comunitarios que proveen agua en comunidades rurales y asentamientos urbanos periféricos. Estas organizaciones se han unido en una Red Nacional que lucha por apoyo y reconocimiento legal, dado que las políticas neoliberales en Colombia no toman en cuenta su naturaleza comunitaria y en cambio les han impuesto requerimientos legales que las empujan hacia la privatización. Partiendo de una perspectiva política ecológica de base Latinoamericana, se discute cómo esta lucha es parte de un amplio movimiento regional donde una racionalidad diferente relativa a la relación humano-naturaleza, no mediada por intereses económicos, esta luchando por sobrevivir y avanzar contestando el modelo capitalista hegemónico. Se argumenta que los acueductos comunitarios ponen en práctica la defensa del agua como bien común en un ejercicio de gobernanza y gestión autónoma que contribuye a la construcción de territorios en Latinoamérica.
Palabras clave: acueductos comunitarios, conflicto por el agua, territorio, ecología política.

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Figure 1: Community aqueduct in Pasto, Colombia (Perugache Salas, 2020).

1. Introduction

In Colombia, there are more than 12.000 community aqueducts (Cas) managed by local associations that provide water to families living in urban peripheries or remote rural areas (Red Nacional de Acueductos Comunitarios, 2017). These aqueducts have been created as autonomous solutions of neighbors who gather around the provision of water, building small infrastructures and taking care of the environment that supply their water sources and managing its distribution and maintenance. Colombia, as part of the regional context of neoliberal reforms, since the early 90s considered water not as a public good but as a scarce resource that could be commodified. Subsequently, the management of water was decentralized and the public policy moved toward the privatization of the provision of water and aqueducts (Perugache, 2022). This legislation did not acknowledge the differential nature of Community Aqueducts, imposing regulations as if they were small for-profit private service administrators of infrastructures, and pushing them towards privatization in the name of modernization and business efficiency. In response, the Community Aqueducts have united in a social movement with a national scope and are currently passing a law demanding their historic recognition as a legitimate alternative

for water provision. Indeed, for decades communities have successfully provided themselves with water, taken care of the environment, and strengthened the social fabric of vulnerable population living in the forgotten rural areas and marginalized urban peripheries.

In this paper I discuss the different aspects of this reivindication as part of a broader movement in Latin America that has been contesting an hegemonic development model. After this brief introduction, In the second section I explore Latin American perspectives on political ecology to present the context of this theoretical approach/debate and its usefulness to study socio-environmental conflicts in the region. In the third part I explore the case of the National Network of Community Aqueducts in Colombia and their struggle for legal recognition as an example of the exercise of resistance or defense of territories. This is followed with a discussion on water as commons, to conclude with some final remarks and paths for future research.

2. Political ecology in Latin America

To embark on the analysis of this case study I provide a review of key voices in contemporary Latin American thought concerned with the questions of political ecology. Most of this production is not available in English and not because it can't be, but rather as a choice. Writing in Spanish and Portuguese has encouraged the debate within the Latinoamerican academic networks to decolonize knowledge from the standards of the western academy. "Latinoamerican Political Ecology is a terrain of own thought with international relevance" as stated in the introduction of the book compiling the academic debates in the field from the Latinoamerican Council of Social Sciences - CLACSO (Alimonda et al., 2017, p.13 O.T.). By own thought meaning an epistemic field that stands on recognizing the plural and contested character of identities in Latinoamerica, a critical approach to hegemonic development models, capitalism, and colonialism, and engaged research that actively dialogs with the different socio-environmental movements and struggles present throughout the region (Alimonda et al., 2017).

There is a fundamental characteristic of the development of the

political ecology production in the region which is its commitment with counter-hegemonic knowledges and practices of a wide diversity of *"ecologismos populares"* (Martínez Alier, 2005). These, Martínez Alier calls environmentalism of the poor, which he defines as the struggles that poor people from the South are embracing in the need to protect their livelihoods from exploitation, often rural peasantry and indigenous communities who have coevolved with nature making a sustainable use of the environment (Martínez Alier, 2005).

Latin American political ecology scholars have stood from a place of enunciation that recognizes the subordination of the region within the global political-economic context and its coloniality to subvert it (Alimonda et al., 2017). "Latinoamerica studies itself" because it seeks to understand its own reality to transform it (Moreano et al., 2017 p.201 O.T.). The emphasis on the local environments and the close relationship of scholars and activists, often sharing identities of researchers as activists, has triggered a fundamental question on the methodology of academic research. From the Participatory Action Research (PAR) method to the pedagogy of the oppressed (see for instance Fals Borda, 1999; Freire,1970) the question of the how's and who´s voices are heard is fundamental and has allowed the embracement of knowledge from black and indigenous peoples, peasants, urban poor, and women to be essential to the academic production.

This "*diálogo de saberes*" is the recognition of the value of the knowledge rooted in the plural rationalities that different cultures developed within specific territories, displacing the supremacy of western scientific knowledge and its alleged universality (Leff, 2005). Allowing the academic production to be the result of a fructiferous dialogue instead of unquestionable expert knowledge isolated from social needs (Moreano et al., 2017). Nonetheless, there are limitations to the emphasis on the local because of its difficulty to reach global scales, as concepts like "Buen Vivir" or "food sovereignty" are anchored to specific territorialities and are not easily translated to global theories (Moreano et al., 2017).

As a result of this exchange in Latinoamerica, there has been an important theoretical discussion around the concept of territory. Arturo Escobar (2015) recalls how indigenous, black, and peasant community movements throughout Latinoamerica since the '80s started a political and epistemic struggle saying "*We don't want land, we want territory*" when facing the neoliberal project of dispossession. In this conception, territory was understood as something else than the physical space for the reproduction of life. It is the manifestation of a different relational ontology in which the *human* and *non-human* are not discrete beings that pre-exist individually but coexist only because of the relationships that constitute us (Escobar, 2015). In the words of this author: "we all exist because everything exists" (p.5).

The concept of territory embodies the disruption of the dichotomy between nature and culture, therefore expressing a decolonial approach to the complex and conflicting rationalities that different actors have over the social construction of space (Leff, 2015; Moreano et al., 2017). Territory is a deeply political concept and is used in the call for action to resist dispossession, privatization, extractivism, pollution, criminalization, and violence. The struggle to defend territories or la *Defensa del Territorio* is the struggle for the possibility of different worlds to coexist (Escobar, 2015).

Defensa del Territorio is not only confrontational resistance to external threats like mining, oil extraction, palm oil plantations, construction of hydroelectrical plants, etc. It encompasses other types of agency, like exercising autonomy over the management of territories, political participation, education as heritage or own education, a comprehensive health system, sustainable economic alternatives like agroecological production, the conservation of biodiversity, and the defense of the commons over privatization like water. The defense of water is also the defense of territories, because water is an individual and collective right for all humans and non-humans. "Nobody can appropriate water, water is essential for life and any damage to water is damage to all life, to all beings, to the earth, and to human beings alike" (Red Nacional de Acueductos

Comunitarios, 2020 p.50 O.T.).
This relational nature of water management has been explained by the political ecology concept of hydrosocial cycle "a socio-natural process by which water and society make and remake each other over space and time" (Budds & Linton, 2014). Boelens et al. (2016) elaborated the concept of hydrosocial territories as the result of the interaction between the social, political, and environmental aspects of water governance in a given territory, which serves to analyze issues of equity and justice in the access and distribution of water. By understanding water governance as complex socio-ecological and political interactions, these authors fight against the illusion that conflicts around water have neutral problems that technological developments and "good governance" can "objectively" solve (Boelens et al., 2016), while unveiling the power dynamics behind water as part of a bigger picture of specific political and economic interests (Fragkou et al., 2022).

3. Community Aqueducts that became a national movement

> *Politics, democracy, community, autonomy, mobilization, and solidarity have become practices and dimensions that identify us as the National Network of Community Aqueducts of Colombia. A journey full of stories and struggles in defense of Community Water Management, in an identity that has been consolidated among equals, in the gathering of its people, and in the clear conviction for the defense of water as a common good.*
>
> -Introductory statement to the book Memoirs of the National Network of Community Aqueducts of Colombia (2020, p.10, O:T)

From here I make an abbreviated description of the history of the Network as it is presented in the recently published book of its memories (2020). CAs as part of a multiplicity of collective ways to manage water have been around for a long time, but it wasn't until

2005 when the campaign called *Water, a public good* started what later would become a social movement for the access to water as a fundamental human right. Community aqueducts were isolated from each other, small by definition, and located in remote rural areas or in the poor neighborhoods of the urban peripheries. A series of meetings and workshops were held to build articulations between organizations and movements concerned with the conflicts around water. This in turn led to the auto-recognition of the existence of thousands of community aqueducts across the country which organized themselves in regional councils and held a series of national assemblies that keep happening yearly until today.

> *Like the drop of water that emerges on the mountain and travels the lands until they join with others who, like it, seek flow between stones giving life to the land, the forests, paths, and communities, so we have come together as National Network of Community Aqueducts for the defense of community self-management of water, life, and the territories.*
> (National Network of Community Aqueducts of Colombia, 2020, p.13, O.T.)

In the beginning, it was a revindication in the framework of the UN Convention of the Economic, Social, and Cultural Rights (ESCR) and it was focused on the access and provision of water as a public service as it was being approached by European and North American movements. But with time, it became a different revindication, "It was neither public state nor private business, but, today we say it with all the letters, community self-management of water." (2020, p. 15). Therefore, the fight was against the privatization of water on one hand but also for the recognition of CAs as valid actors because the regulations of the state ignored its existence.

According to a recent report launched by the Network (2021) concerning the violations of the right to the community self-management of water, there are two fundamental problems regarding CAs. First, there are disputes around water use as a

common good for all and its use for the development of extractivist economies and a model of capitalist development. Here, water is considered a resource in service of a production system for the accumulation of capital. Water accumulation is intertwined with land accumulation, land use changes, and land and water grabbing because in order for land to be productive there is a need for water. The Network (2021) has identified the main conflicts produced by this development model regarding water use as follows: mining industries in delicate ecosystems that pollute and affect the provision of water downstream; overexploitation of water for agro-industrial crops like avocado, palm oil, pineapple, and forestry; construction of hydroelectric dams and their complex affectation on water cycles; urbanization, inappropriate urban planning regarding waste management; gentrification and increasing tension between urban sprawl and rural territories. All these examples of socio-environmental conflicts that happen at a local scale but are a result of global political-economic dynamics.

And secondly, the national legal framework that regulates the provision of water to citizens from a business perspective, either public or private, where a communitarian approach is not possible, pushing the transformation of the CA into a logic of for-profit entrepreneurship. The Law 142 of 1994 regulates the provision of home public services, which focuses on the creation of a centralized system of control with the aim of ensuring the financial viability of the providers to guarantee the quality and continuity of public services to all users. The entity in charge of the vigilance and control of the public and private providers (SSPD by its acronym in Spanish) ignores the communitarian nature of the CAs and demands from them requirements that they cannot meet, which later translates into monetary sanctions. In the framework of this law, CAs are pushed to be formally legalized to be able to access any kind of support or recognition. Their legal possibility is to become non-profit association, which has the advantage of not paying taxes but leaves the CA in legal limbo because they become formal providers of public services which entails difficult implications. One example

of the latter is the establishment of contracts with users, which goes against the logic of trust and reciprocity between neighbors. Also, the imposition of metering systems and tariffs regulated by national entities that do not consider the tradition of solidarity economy that in contexts of inequality and vulnerability has been key to ensure the right to water to all individuals and communities.

Another important conflict related to Law 142 is the water quality and environmental requirements that are impossible to meet on the scale of a CAs and that ignore the work of protection of basins and impose the need for chemical treatment of water. "*We know that the best treatment for water is having healthy ecosystems",*[1] therefore CAs focus on reforestation, the protection of basins, sound management, and waste disposal. There is a tension between the need for the modernization of the aqueducts infrastructure in a proper manner since the Network claims that there is no need for complex technological infrastructures that are too expensive to build and maintain. In contrast, it demands the recognition and support of simple systems that have the capacity to perform in accordance with local contexts.

The formulation of risk management plans, emergency and contingency plans, and environmental plans, as well as the administrative paperwork that businesses and organizations are required to do by law, cannot be done by CAs as they don't have resources nor the technical knowledge to formulate them. These excessive requirements for the scale of the CAs become a burden if there is no accurate recognition of their differential nature and there is no effective support and capacity building from state agencies that should strengthen the work of the CAs.

The CAs associated in the National Network have developed an advocacy political agenda claiming their recognition and presenting solutions to the problems identified obove. In 2011, they developed a comprehensive and participatory process to write a legislative proposal which was presented to the Congress in 2017, and between 2015 and 2017 they promoted three public hearings in Colombia's National Congress to discuss their proposed legislation. So far, they

have not been able to secure the majority support within Congress to pass the law, but continue enforcing it amoungh themselves as an autonomous excersice of self determination. More recently they managed to establish a permanent working group with the Vice Ministry of Water and Basic Sanitation, an important space of direct dialogue between the CAs and the institution responsible at the national level. They have also reached out to the international sphere, presenting their case to the United Nations Special Rapporteur on the human right to safe drinking water and sanitation, and participated in international congresses and alliances of similar movements and organizations in Latinoamerica. The Network has worked together with research institutes in universities, national and international NGOs, and international cooperation to support their struggle throughout the years.

> *Community aqueducts are social and public managers of water, we have distinguished ourselves throughout history for our impact on local and comprehensive environmental management in the territories. We are an ancestral legacy that has passed from generation to generation, consolidating and defending identity and territories. We are a common good and cultural and environmental heritage of the nation.*
> (National Network of Community Aqueducts of Colombia, 2020 p.50, O.T.)

4. Discussion

4.1 On water as commons

According to Claudia Cadavid from the CA of San Andrés, Girardota, Antioquía "*A community aqueduct is the people who gather around the water to supply themselves with the vital liquid, because water is the engine that makes run everything in life"*[2]. This definition describes the understanding of CA not as a technical solution to a specific need but as an exercise, as an action. Benavides & Attanasova (2020) explain how the common is something that is constructed by people who decide to work together for the benefit of all, from a

day-to-day life exercise of solidarity and care to the organization and mobilization as part of greater demand for justice.

> *Community aqueducts are organizations that consolidate themselves in collective action, participatory democracy, and in the construction of territory around water. We are autonomous organizations congregated in the assembly, the minga and the convite[3], based on solidarity and trust between neighbors* (National Network of Community Aqueducts of Colombia, 2020, p.73, O.T.*)*

Silvia Federici explains in a broader context how the commons are a political framework for thinking on alternatives to capitalism (2019). She argues that commons have existed for thousands of years across all societies even surviving under direct attacks of capitalism, which depends on the destruction of communal relationships and properties (Federici, 2019). "Water is not a commodity, but a common good, not only of humanity but of all living beings and that is why we oppose all forms of privatization and commodification" (National Network of Community Aqueducts of Colombia, 2020, p.18, O.T.).

The understanding of water as a common good instead of a natural resource is also fundamental to CAs. Water as a natural resource implies the subordination of nature to be used by humans, in a hierarchical anthropocentric functionality to capitalism (Alimonda et al., 2017). Instead, water as commons is part of the concern with the preservation of the commons in their relational communitarian and collective nature for the reproduction of life (Alimonda et al., 2017). Therefore, CAs use water for their land, their homes, their plants, and their animals, instead of prioritazing the provision of water for extractivist industries and high demanding production systems.

4.2 Hydrosocial territories 'at work'

An in-depth case study that used the theoretical framework of

hydrosocial territories is the work done by Jorge Perugache and the Andean Institute of Popular Arts of the University of Nariño in the south of Colombia. They have not only been researching but also committed for many years to accompany the struggle of the CAs in the surrounding areas of the city of Pasto, which are threatened by the urban sprawl of the city and the pressure to privatize water. This work, based on the PAR methodology, has unveiled the local tensions within the communities, the conflicts at the regional level with the clashing development imaginaries of regional elites, and at the national level the bigger picture of neoliberal policies that pushes towards the privatization of water and the CAs (Perugache, 2020).

Perugache (2020) acknowledges in the conclusion of his study that it is necessary to take into account the complexity, hetherogenity and contradiction of the actors involved in the local governance. There might be unequal power dynamics within the communities, especially in terms of gender inequalities in the decision-making around water and differential effects on women and men related to the division between public and private spheres of the reproduction of life. There might be even contradictions in terms of ecological equilibrium in how the water is used, conserved and protected, and there might be conflicting views inside the communities on their expectations and visions of the future. Nonetheless, the author considers that the communitarian approach to water management is a vivid example of how popular organization and collective management is a fracture to the hegemonic model of commodification and exploitation of nature (Perugache, 2020). "(CAs) can challenge the monopoly of modern practices to define, make and inhabit nature, and whose emergence in critical moments like the current ones, together with the telluric entities that also belong to these worlds, explains their awakening to be and continue to be in the time" (Perugache, 2020, p.360).

The National Network created collectively their legislative project called "Own Law: by means of which the right to community self-management of water, its individual and collective use, and other

provisions are dictated" (2017). The law is a reivindication of the recognition of the CAs as legitimate actors and a call for their strengthening and support. But fundamentally it is a demand for the right to exist as a different model of relation between humans and water and between peoples, one that is not mediated by the logics of capital, one that has already been around since ancestral times, and that is resisting the threats of the hegemonic development model.

5. Final remarks

As final remarks I here present some concluding thoughts and possible research topics for further development. The CAs are an autonomous response to the lack of presence of the Colombian state in vulnerable communities. Instead of empowering the CAs in recognition of their importance, and by doing so strengthening its presence in all society, the state has imposed regulations that were designed to push them towards privatization.

Democracy is about people having the right to participate and decide for themselves. In a democratic and plural society like Colombia, CAs are in their right to fight for a differential recognition of their existence and to seek support. To further strength democracy, the state should listen to the voices of these communities, because there is value in allowing different expressions and visions of future to exist.

In pragmatic terms, CAs solve the need of homes where the provision of water by private actors is too expensive because of the remoteness, the disperse nature of rural settlements or the difficulties and risks that an informal urban periphery implies. Where poor families can't afford paying expensive water bills, the margins of profit are too low for the private sector to be interested in investing in building infrastructure, maintenance, and management. In holistic terms, CAs contribute to solve the current socio-environmental crisis we are facing today, by taking care of the environment and the human relations around water, creating healthier communities connected with the sacred of what is essential to life.

For further research there are two topics that I would like to propose. First, the need for political ecologist to find ways to transcend the

social and natural science academic spheres and reach the engineers, the architects, the business managers, the local governmental officials etc., There is a need to better explain to these professionals and policy makers the benefits and importance of taking into account the voices and differential experiences of communities in the territories, to create innovative, sustainable and proper solutions to the provision of water as a human right to all. And secondly, for the CAs it is necessary to keep finding ways to strengthen their internal organization, to understand their internal power dynamics and how they are mediated by patriarchy or exclusionary logics. Particularly, work should emphasize ways to ensure the effective participation of women because of their key importance as agents in community water governance, recognizing their historic role in the construction and defense of their territories.

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Notas

[1] Words of Daniela Ruiz in the 2nd National Congress Agua al Campo 2021 in representation of The National Network of Comunity Acqueducts of Colombia https://www.youtube.com/watch?v=XOSYAB0njFA

[2] National Network of Comunity Aqueducts video https://www.youtube.com/watch?v=LAzwZ3TSGq0

[3] Minga and Convite are two traditional forms of colective work from rural comunitites in Colombia.

Recepción: 11 de abril 2022
Aceptación: 23 septiembre 2022
Versión Final: 27 septiembre 2022

https://doi.org/10.22370/pe.2022.13.3443

Resisting urban neoliberalism through social innovation: the case of Italian Centri Sociali

Resistencia al neoliberalismo urbano a través de la innovación social: el caso del Centri Sociali Italiano

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Abstract
Centri sociali have been a common social, political, and spatial phenomenon in Italian cities since the 1970s. Since then, they emerged as active, youth-oriented places of left-wing and radical activism often operating at the margins of the urban fabric and in conflict with local institutions. In addition to political action, Centri Sociali play a social and cultural role in cities as spaces of leisure, social aggregation, and mutual support. This paper investigates how these groups locate themselves in an increasingly neoliberal urban environment by exploring their goals, the role they play in the wider communities, the issues they wish to address, and the strategies they mobilise. After presenting an overview of the concept and history of Italian Centri Sociali, the theoretical concept of urban neoliberalism is used to set the scene in which such groups are currently active and to explain the nature of the issues and challenges they aim to tackle. Further, the actions and strategies used by Centri Sociali are analysed through the lenses of Social Innovation Theory. This paper aims to understand how social innovation is used by Centri Sociali to create alternative urban spaces outside of neoliberal and capitalistic dynamics. It does so by using secondary data retrieved through literature review and through primary data collected via semi-structured interviews with 15 representatives from various Centri Sociali around Italy.
Keywords: Centri Sociali, social innovation, urban struggles, neoliberalism, grassroots organizations. JEL: Y80, Z13

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Resumen

Centri Sociali (Centros Sociales) han sido un fenómeno social, político, y espacial común en ciudades italianas desde los años 70s. Desde sus inicios, surgieron como lugares activos con inclinación de izquierda, orientados a las y los jóvenes, a través de una propuesta de activismo radical, a menudo operando en los márgenes de la fábrica urbana y en conflicto con instituciones locales. Además de su acción política, Los Centri Sociali juegan un rol social y cultural en ciudades como espacios de ocio, agregación social, y apoyo mutuo. Este artículo investiga cómo estos grupos se localizan en un ambiente urbano crecientemente neoliberal explorando sus objetivos, el rol que juegan en la comunidad ampliada, los temas que buscan abordar, y las estrategias que movilizan para estos fines. Después de presentar una visión general del concepto y la historia de los Centri Sociali italianos, el concepto teórico de neoliberalismo urbano es utilizado para delinear el contexto en el cual estos grupos se desarrollan actualmente y para explicar la naturaleza de los temas y desafíos que enfrentan. Luego, las acciones y estrategias de los Centri Sociali son analizadas desde la propuesta teórica de la innovación social. Este artículo intenta comprehender cómo la innovación social es utilizada por los Centri Sociali para crear espacios urbanos alternativos fuera de las dinámicas capitalista-neoliberales. Todo esto basado en datos secundarios provenientes de una revisión bibliográfica sobre el fenómeno y datos primarios recolectados en 15 entrevistas semiestructuradas con representantes de varios Cenri Sociales a lo largo de Italia.

Palabras clave: Centri Sociali, innovación social, luchas urbanas, neoliberalismo, organizaciones de base.

1. Understanding Italian Centri Sociali

In order to explore the role played by *Centri Sociali* (CS) within the Italian urban fabric and their relation to the so-called neoliberal city it is fundamental to understand the multi-faceted nature of such phenomena. However, before looking at the characteristics of contemporary CS it is worth contextualising these spaces in time by considering their origins and historical development. After briefly presenting their history, the current configurations of the phenomenon are explored by identifying common features and themes shared across CS in Italy. This section includes insights derived from literature review and the analysis of primary data.

1.1. A brief historical overview of Centri Sociali

Centri Sociali have a long tradition in Europe but especially in Italy. Here, the roots of CS can be traced back to the 19th century, when mutual aid organizations (e.g. *Case del Popolo*[1]) assembled the working class, acting as centres of political and social interaction during the rising of the socialist movement (Mudu, 2004; Piazza, 2012, 2018). However, modern CS will rise only in the 1970s, as a result of social and economic turmoil linked to the historical transition from Fordism to flexible accumulation. In those years, students and workers engage in massive political action all over the country. Countless and harsh protests become a response to profound socioeconomic transformations and to the emerging inability of traditional political parties to address contemporary social needs (Ruggiero, 2000). In a way, Italian CS are one of the many movements that originated from the social, political, and cultural shocks taking place in the 70s and 80s. In this re-configuration, far-left groups created the "Self-managed Social Centres" (i.e. Centri Sociali) taking political action outside the parliament and into the cities, focusing on "the microphysics of power over institutional conflict" (Mudu, 2004, pp.191).

The fast disappearance of public space in favour of privatization and the inability of unions and traditional left-wing parties to create new contexts for social and political action push the youth

to imagine alternative places of aggregation and activism. In this scenario of conflict and unmet social and spatial needs, contemporary CS started rising in Italian cities uniting activists and supporters looking for spaces where to cultivate their own idea of a society based on a set of shared values and beliefs. In this phase, CS had a strong antagonistic character acting in clear opposition to traditional institutions and concentrating their efforts on urban marginalisation and the challenges faced by women and the working-class youth (Dines, 1999; Mudu, 2012). Since then, CS have revolutionised the Italian political scene through the creation of non-hierarchical spaces dedicated to communal social, political, and cultural life. In the 90s the phenomenon became more popular, engaging with the "no global" movement[2] (Fonio, 2004) and becoming a mass culture phenomenon, especially among the youth. In the last decades, Italian CS have lost some of their popularity, currently living a moment of crisis due to a general loss of interest in political engagement. Despite this, they can still be found in all major Italian cities and are active parts of local and national political arenas.

When talking about the history of CS one must note how, since its beginning, this political phenomenon is characterised by distinctive geographic and spatial configurations. All CS have in fact strong local identities as they focus on creating and enabling change within the communities they inhabit. More precisely, they are "geared towards gaining control of existing spaces and devising new ones" (Mudu, 2004, pp. 198). Such spatial dimension is embedded in the way CS appropriate (e.g. through squatting) public or private empty spaces to transform them and to ultimately give them back to the community. In this sense, *Centri Sociali* have always been a strongly spatial phenomenon with strong ties to local geographies, acting as agents of change in the urban fabric. But what does this transformative element look like on the field? What are *Centri Sociali* today?

1.2. Centri Sociali: spaces of politics, culture, and aggregation

Due to their close linkages with the realities in which they emerge, CS can be very different from each other. It is however possible to identify some common elements that constitute the core of these movements and spaces (Mudu, 2004). Many share in fact a set of common practices and identities that enable the creation of a general profile (Genova, 2018, 2021; Pecorelli, 2015). Under the acronym CSOA (*Centro Sociale Occupato Autogestito*) or CSA (*Centro Sociale Autogestito*) these movements are known for autonomously organising and managing events of various nature ranging from protests to conferences. Decision making takes the form of timely, open meetings characterised by horizontal governance and no hierarchical structures. Traditionally, CS are funded via the selling of food and drinks during the events and all those involved in the activities participate on a voluntary base, with no contract or salary.

Similarities can also be found in the topics around which most CS mobilise their political actions (Pecorelli, 2015). Recurrent themes include antifascism, antiracism, environmental issues, education, students' and workers' rights, feminism, etc. Alongside these general issues, they focus on more local problems relevant to the city in which they operate (Dines,1999; Berzano & Gallini, 2000); these can include the contestation of local policies, supporting low-income households, providing assistance to migrants, and much more. Political action takes the form of awareness campaigns, fundraising, demonstrations, and workshops. These are often organised in collaboration with other local actors that are politically close to the ideals of the so-called far left and leading to the creation of vast networks of movements stretching throughout the peninsula.

CS are extremely politicised spaces. However, they also act as an oasis of cultural expression and leisure. CS host concerts, theatre performances, movies and documentary screenings with the intent of providing free or cheap cultural events to neighbourhoods and urban communities. Similarly, they use their "freed spaces" to organise accessible activities for local communities with special

attention to kids and elders. Community-led gyms, music and art lessons, and community-building events (e.g. neighbourhood dinners and parties) are all initiatives organised by these groups with the intention of answering the unheard needs of disenfranchised urban communities, especially in peripherical urban areas affected by social and economic problems.

For activists and sympathisers, CS are centres of social aggregation (Genova, 2021). They are visited not only as centres of political action but also as key locations of social interactions among members of a community who share a specific idea of society. In this sense, CS are to be considered not only as political elements of the urban fabric, but also as social spaces where like-minded individuals spend their free time mixing leisure and activism, and as places of contestation but also of community building. Ultimately, these movements merge social and political activities with the intent of building and sustaining alternative spaces outside of the hegemonic capitalist system where to explore different ways of living and experiencing the city (Membretti, 2007; Pecorelli, 2015; Pusey, 2010).

2. Fighting the Neoliberal City

In the previous paragraphs, I explored the social and spatial configuration of Italian *Centri Sociali* and the role they play in the communities with whom they operate, particularly in the urban fabric. CS are for the vast majority urban phenomena: "the city is their field of action, and urban public space is often intended as a battleground" (Genova, 2021). The urban reality is the chosen space where to fight dominant and hegemonic economic and sociocultural dynamics. Here is where CS fight to *reclaim the city*, in opposition to capitalist and neoliberal processes and in favour of a societal vision based on solidarity and cooperation (Chatterton, 2002;2010). In the next section, we will explore the characteristics of this battleground by looking at how neoliberalism takes form in the urban landscape.

2.1. Challenges and configuration of urban neoliberalism

In the past decades, neoliberalism has been at the very centre of contemporary debates on cities and urban development. The roots of neoliberalism can be traced back to the 1980s, right at the end of the so-called "golden age of capitalism" and of the Keynesian economic model (Brenner & Theodore, 2002; Rossi & Vanolo, 2015). Accompanied by the emergence of conservative American and British governments, neoliberalism pursued economic strategies based on free-market relations spreading fast globally, with consequences on the urban scale leading to strong dynamics of privatisation, commodification, and government entrepreneurialisation (Bodnar, 2015; Smith, 1996; Rossi & Vanolo, 2015). More precisely, urban neoliberalism represents "the translation of the logic of free-market capitalism into the urban domain of socio-spatial relations" (Rossi & Vanolo, 2015, p.2) leading to complex forms of restructuring aimed at facilitating economic development. In this scenario, cities were the protagonist of a variety of phenomena among which the most common consist in welfare dismantling, the reduction of health and educational services, and a decrease in the supply of public housing. The emphasis on economic growth at the expense of social justice fostered growing social and economic disparities all around the world, putting extra pressure on low-income neighbourhoods and fragile communities. Empirical evidence shows correlation between increasing urban inequalities and neoliberal processes (Aguirre et al., 2006). By reducing access to basic needs traditionally provided by the State, neoliberalism has highly increased the number of people living in situation of socioeconomic marginalisation (Brenner & Theodore, 2002; Parenti, 2009).

If on one side neoliberalism pushes for restrictive fiscal policies and reduces public spending in welfare, on the other, it wishes to attract capital into the city. It does so by incentivising infrastructure projects (e.g. megaprojects) and through urban renewal. It favours the creation of new spaces for consumption and exerts strict control on deviant behaviours that could perturb the city's ability to attract capital. Neoliberal cities play the role of engines of economic growth

leading to a new global urbanism fighting to win private capital and neglecting those social policies intended for social equilibrium and integration that characterised the post-WWII urban landscape (Parenti, 2009; Smith, 2002). Therefore, the city becomes more and more inaccessible for high numbers of citizens while catering to the needs and preferences of the upper classes. The city is transformed to accommodate capital by often excluding the local communities, as well exemplified by gentrification processes (Bryson, 2013).

In the neoliberal city, the urban fabric adapts to the demands and rules of international flows of capital, putting citizens' welfare and needs in a subordinate position (Parenti, 2009; Rossi & Vanolo, 2015; Walks, 2006). As the role of state and local governments shrunk, alternative urban movements such as CS filled the spatial (i.e. abandoned factories and buildings), social (i.e. decreasing number of public spaces and welfare programs), and cultural (e.g. the deficiency of non-commodified educational and recreation opportunities) gaps left by the changing urban landscape. From there, such movements fight their battles against a city that is being taken away from the citizens in their effort of reclaiming the urban spaces for those who live and work in it.

3. Practising Social Innovation

Social innovation (SI) is a complex, multidimensional concept, inherently complicated to define. To use the words of Moulaert et al. (2013, pp.16), SI consists in "finding acceptable progressive solutions for a whole range of problems of exclusion, deprivation, alienation, lack of wellbeing, and also to those actions that contribute positively to significant human progress and development". Through SI, individuals and communities mobilise action in order to address a specific problematic and trigger positive change and satisfy unmet social, economic, and cultural needs. Consequently, SI has no fixed form, it is instead contextual and socio-spatially embedded in local issues, opportunities, and dynamics. In a way, SI represents a community's attempt to creatively find alternative solutions to an issue or to satisfy a need through direct action (Mehmood & Parra, 2013).

The OECD defines SI as "the design and implementation of new solutions that imply conceptual, process, product, or organisational change, which ultimately aim to improve the welfare and wellbeing of individuals and communities" (OECD, nd.). Three elements (Mehmood, & Parra, 2013; Moulaert et al., 2013) are particularly central to socially innovative action:

· It has the goal of addressing the unmet needs of a group or community.

· It employs participatory and alternative forms of governance.

· It produces the empowerment of those it wishes to support.

It is no surprise that such an instrument has increasingly attracted the attention of academics and activists as a way to make sense of and address the profound changes in increasingly neoliberal societies (Joy et al., 2019; Peck, 2013). In this context, SI has become a way for communities to oppose neoliberal dynamics of commodification, individualism, privatisation, and more. As the rules of the market become central to the disadvantage of the social component, SI is mobilised to fill those voids left by the State and to create occasions for community development and cooperative action. SI is often addressed by a variety of actors ranging from policymakers to activists as an important element in facing major contemporary societal challenges ranging from poverty and exclusion to food security and climate change adaptation (European Commission, 2013). Different conceptualisations and operationalizations of the concept have resulted in a variety of diverse initiatives. Once again, urban spaces have acted as incubators for this type of experiences, leading to many and diverse socially innovative initiatives.

3.1. Urban social innovation

Urban dynamics and social innovations have often engaged with each other in cities all over the world. In the urban context, SI tends to fall into three main categories: (1) spatial planning and community development; (2) governance systems; and (3) design and co-production of services (Ardill et al., 2018). For the sake of this study, we will focus on the first of these categories.

When it comes to spatial planning, socially innovative tools are used in a variety of ways and with many goals. The literature is rich in case studies where SI is used as a way to (re)build communities and to transform and reclaim urban spaces (Angelidou & Psaltoglou, 2017; Ardill et al., 2018; Gerometta, 2005; Nyseth & Hamdouch, 2019; Thompson, 2019). Whether by addressing the challenges of deprived neighbourhoods or empowering fragile urban communities, this phenomenon has a strong spatial dimension as it pursues positive change through direct interventions on the built environment and its social uses. By doing so, SI has become a driver of urban transformation both in Global North and in the South entering *de facto* in mainstream debates and policy discussions about urban development (Ardill et al., 2018). Urban SI practices include: community and guerrilla gardening, community organisations, citizen activist groups, social inclusion movements, alternative transport and mobility systems, to name a few.

4. Discussion: Centri Sociali as sources of Social Innovation

Within increasingly neoliberal urban spaces, Italian CS act as centres of socially innovative action. As a matter of fact, these realities employ a number of strategies that match the characteristics, goals, and modalities delineated by SI Theory. They do so in their attempt to fight dominant, capitalistic, and neoliberal dynamics while also creating alternative urban spaces. The subsequent paragraphs navigate such actions connecting them to the social innovation framework. This discussion is conducted by focusing on three main elements identified of Social Innovation by Mehmood and Parra (2013): goals, governance, and empowerment.

4.1. Goals

Centri Sociali – just as any other form of SI– wish to address some of the unmet needs of the communities in which they are active. It is no coincidence that most of them are in fact located in neighbourhoods historically characterised by high levels of social unrest, full of spatial and social voids. This is the case of peripheric and marginalised

city districts, often inhabited by disenfranchised communities and characterised by low-income households. Here, CS often act as providers of services that have historically been lacking in the area and that are now disappearing due to the implementation of the neoliberal policies previously described. The local character of CS and their embeddedness in these places lead them to strongly focus on local issues and on how to practically tackle them.

This is particularly evident in the many initiatives geared toward providing assistance to fellow city-dwellers that find themselves in a position of vulnerability and are otherwise disregarded and ignored by market-oriented urban policies and dynamics. For example, activists from CS are known to help people facing forced eviction by providing alternative housing opportunities or by directly stopping them from happening[3]. Similarly, CS offer legal counsel and support to the many communities of unregulated immigrants and asylum-seekers living in Italian cities, helping them navigate bureaucracy and providing practical aid.

CS' efforts to address situations of distress and unmet needs can have many forms, some of which are directly linked to the creation and transformation of urban space. As CS react to local challenges, they in fact transform the socio-spatial features of the places in which they are active. This is particularly clear when CS are seen as physical spaces that are taken and adapted by activists to serve as sources of change. Through such dynamics, abandoned and empty spaces are re-purposed to meet the needs of those peripheric or marginal communities that are otherwise ignored by the neoliberal city. In this way, space is claimed to serve the community, providing occasions for educational activities (e.g. courses and movie clubs), sport (e.g. community-led gyms), and leisure (e.g. musical events and performances) in urban areas where such experiences are either unavailable or commodified.

In some more extreme instances, the activists might even substitute the State by taking action to ensure safety and fight degradation in the community. This includes carrying out construction work and gardening in public areas of the neighbourhood, but also monitoring

and surveillance against city gangs, violent far-right groups, and drug dealers.

4.2. Governance

The socially innovative character of Centri Sociali is not only found in their wish to act as positive agents of change. How the actors behave and how they are organised expresses the socially innovative character of their governance systems. In return, this leads to a nuanced understanding of the functioning of such realities as sources of transformative dynamics in the urban landscape. Throughout the data collection process, three main points came out in regard to governance: self-management, horizontality, and bottom-up dynamics.

CS make of self-management a core aspect of their identity to the point where the term "*autogestione*" (self-management) is always present in the name of the groups[4]. In terms of governance this means a variety of things. In the more practical sense, it means that CS fully rely on self-financing for their activities, which are run through cooperative, informal models geared towards securing the survival of the initiative rather than making profit. It also means that the space is entirely managed by the community, and that the group is responsible for making sure that daily activity and events proceed smoothly. From cleaning to budgeting, the activists are responsible for every aspect of the life in the CS. The concept of *autogestione* also carries a strong oppositional character versus the outside world, characterised by those dynamics that CS oppose to. By declaring a section of urban land as self-managed the aim is to take it back from capitalism and neoliberalism and return it to the citizens.

Horizontality represents the will of CS to create spaces that do not reproduce hierarchical dynamics of power. Horizontality emerges because they are characterised by the lack of formal roles giving specific individuals particular influence or power over the groups. Thus, no chairmen or presidents can be found, and everyone's opinion is supposed to matter the same. The operationalisation of the notion of horizontality is exemplified by the weekly assemblies.

These meetings are always open to the public and can be accessed by everyone no matter of how engaged they might be with the group and its activities. Here the activists also make decisions. They do so by voting and by interpreting the idea of horizontality in a specific way. In fact, decisions are made only if they are unanimous and not following a logic by which the majority wins.

Finally, CS are and have always been bottom-up movements (Aureli & Mundu, 2017, Montagna, 2006; Mudu, 2012). As seen in the previous pages, these places are often the result of a community's wish to transform the socio-spatial dynamics in which it lives. They also are a reaction to the impossibility to do so via more traditional ways. Ultimately, CS are triggered by small groups initiating change in the context and places they live (Srinivas & Youngblood, 2018). Although these groups do interact among each other through informal, national, and international networks, all aspects related to building and sharing knowledge is taking place locally though the constant and casual exchange of expertise and skills. These factors – along with the horizontality and self-management argued above – characterise CS as typical bottom-up social movements.

4.3. Empowerment

SI is known as a tool for producing empowerment. The data collected suggests that CS play a role in the empowerment of local communities, with special attention to vulnerable communities such as elders, the youth, immigrants, and low-income households. This is achieved by creating opportunities in otherwise deprived communities which are not attended by the decreasing services of the neoliberal city. In this scenario, afterschool activities represent educational activities for children and became a support to working parents. Similarly, art and sports activities are used to keep the youth away from deviating in criminal activities or substance abuse. Elder citizens can on the other hand find a space to meet and spend some time in company. The integration of immigrants in such realities helps fight alienation and social segregation.

The creation of spaces (e.g. community gyms and libraries) and

activities is valuable for individuals as they can benefit from free or cheap services that would not otherwise be available in the area. It also adds value to the neighbourhood, giving it new life and turning it into more of a place where one might simply live, study, or work. In this sense, the role played by CS as spaces for sociality and aggregation for the wider neighbourhood/community is also relevant in regard to empowerment. In cities where public space and places dedicated to socialisation disappear or become commodified, CS provide alternatives to visions of the city that put the people at the centre. This can lead to community building and to create a sense of belonging and ownership within the urban landscape bringing back the social into the city. The social component of CS is here crucial as it facilitates the establishment of new social dynamics geared towards improving the life in the city.

5. Final considerations

This paper wished to move beyond the more typical representations of CS as purely political actors and rather explored how these spaces position themselves in changing urban scenarios as centres of urban social innovation. Understanding this might be helpful in learning how to harvest positive practices and models for better urban management and policymaking. CS are and have been for decades central figures in Italian cities. Their ability to address the issues of the urban fabric while changing with it make of CS a rich source of insights for those interested in understanding the dynamic nature of Italian cities.

In this essay, the action of CS has been linked to the SI theoretical framework. This was done by analysing the goals and governance style of such spaces, and by exploring their ability to produce empowerment. By looking at the spatial and social configuration of these realities it shed a light on the role of these spaces in triggering socially innovative change within the urban landscape. Through the re-appropriation of space, a CS wishes to create a place of communion where individuals who share values, political beliefs, and similar perspectives can get together and enable positive change.

In the meantime, they engage with those that do not share such views through advocacy and everyday initiatives, which are not limited to only those who are directly involved with the more political side of the phenomenon. Here, political action and leisure meet in a place that has been freed from capitalist, hierarchical dynamics in favour of an alternative vision based on cooperation and leading to social innovative actions and scenarios. By demonstrating the role of CS as example of SI, this paper reflected on the value of such spaces in increasingly neoliberal cities and on their contribution in the creation of new urban communities.

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Notas

[1] Italian variants of the French and Belgian *Maisons du Peuple.*

[2] The term refers to the heterogeneous set of movements and organisations born at the end of the 20th century. Brought together by a shared belief in the need for the creation of alternative socioeconomic systems, these realities condemn the social, economic, and environmntal effects of globalisation trends (Ayres, 2004). In the Italian context, the movement reunited a large number of organisations, ranging from the political parties to feminist and enviornmental groups. In the country, the movement became tragically famous in 2001 during the G8 meeting in Genoa, where no-global protestors were subject to tortures and violent actions at the hands of the Italian police.

[3] This is achieved by blocking law enforcement access to the houses, through squatting, sit-ins, and other demonstration strategies.

[4] In both the acronyms cited in pp. 3 CSOA and CSA the A stands for *autogestione* (self-management).

Recepción: 11 de abril 2022
Aceptación: 23 septiembre 2022
Versión Final: 27 septiembre 2022

https://doi.org/10.22370/pe.2022.13.3444

Exploring the reasons behind the Belgian prohibition of the commercialization of the plant Artemisia annua.

Explorando las razones detrás de la prohibición belga de la comercialización de la planta Artemisia annua.

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Abstract
This paper explores the prohibition of the commercialization of the plant Artemisia annua for fighting malaria through three political ecology concepts. Firstly, from the perspective of epistemic coloniality, the power/knowledge dimension is highlighted as key to understand how the scientific knowledge produced in the West renders invisible whatever is outside that canon (among which the Artemisia annua tea infusion). Secondly, using a technocratic lens, I identify a techno-elite composed by companies and individuals which intensively promote the standard drugs (ACTs) at the expense of the traditional tea infusion, and that for profitability reasons. Finally, through the logic of commodification of nature, I argue that the Artemisia annua tea infusion struggles to reach scientific validity because it is not (yet) profitable enough to acquire that status.
Keywords: epistemic coloniality, technocracy, commodification of nature, traditional Chinese medicine, Artemisia annua. JEL: F54, I18, K32, P16

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Resumen

Este artículo explora la prohibición de la comercialización de la planta Artemisia annua para combatir la malaria a través de tres conceptos de la ecología política. En primera instancia, desde la perspectiva de la colonialidad epistémica, la dimensión poder/conocimiento es relevada como clave para comprehender cómo el conocimiento científico producido en Occidente invisibiliza cualquier conocimiento que se encuentre fuera de ese canon (entre los cuales se ubica la infusión de té proveniente de la Artemisia annua). En segundo lugar, usando el lente de la tecnocracia, se identifica una tecno-elite compuesta por compañías e individuos que promueven intensamente los medicamentos estándar (ACTs) en detrimento de la infusión de té tradicional, y esto meramente por razones de rentabilidad económica. Finalmente, a través de la lógica de mercantilización de la naturaleza, se argumenta que la infusión de té Artemisia annua no logra conseguir validez científica toda vez que (aún) no es suficientemente rentable para adquirir ese status.

Palabras clave: colonialidad epistémica, tecnocracia, mercantilización de la naturaleza, medicina tradicional China, Artemisia annua.

1. Introduction

The knowledge-producing domains are multiple and together condition our understanding of nature. But how complete is that understanding when, as philosopher Ludwig Wittgenstein quotes, "the limits of my language are the limits of my world" (Castree, 2005, p.xviii). Knowledge is always a matter of perspective and thus functions as a filter, focusing attention and validity on some claims while casting out some others. Thus, to the question 'what is nature?', it is my limited conventional understanding of nature that is on display. And even then, are they mine or are they mediated for us? And who mediates that experience of nature? Castree (2005) argues that it comes down to a high-stakes contest in which various knowledge systems seek to be heard on their views of nature.

The knowledge systems covered in this paper are traditional knowledge in relation to Western science[1], in the realm of medicine more specifically. Western scientific knowledge is referred to as "knowledge that relies on the established laws through the application of a scientific method to the phenomena. Its method begins with an observation and is followed by a prediction or hypothesis that has to be tested" (Gumbo, 2017, n.d.). Regarding the domain of medicine, this is the dominant system in the developed world (Abbott, 2014). Traditional medicine (TM), instead, is defined by the World Health Organization (WHO hereafter) as:

"the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment of physical and mental illness" (Abbott, 2014, p.3).

While the former is knowledge based on a scientific method, the latter adopts a more intuitive and holistic approach. Both are distinct in their features, but appeal to the same category of knowledge systems, which is what this paper puts forward.

Among the traditional medicine systems figures traditional Chinese medicine (TCM hereafter) and the case of the Artemisia

annua tea infusion is a TCM that wants to be heard in the fight for eradicating malaria. However, it has not been given much consideration. Instead, it is the artemisinin combination therapies (ACTs hereafter) -deriving from the millenia-old plant Artemisia *annua* as well- that is the most common conventional treatment for malaria today. Moreover, Belgium has prohibited the manufacturing and the commercialization of the Artemisia *annua* plant since 1997[2], declaring it as a "dangerous plant", and the WHO does not recommend the consumption of the Artemisia *annua* tea infusion (Gruessner *et al.*, 2019). However, it has recently proven to be therapeutically effective against malaria (Weathers *et al.*, 2014 ; Gruessner *et al.*, 2019). Indeed, its success stories highlight the merit and the promising future ahead of the Artemisia *annua* tea infusion as a global alternative against malaria. Illustratively, among these stories there are the Artemisia *annua* tea trials (Weathers *et al.*, 2014), a recent case report stating that Artemisia *annua* dried leaf tablets saved patients resistant to ACT (Daddy *et al.*, 2017) and two double-blinded tea trials conducted in 2015 (Gruessner *et al.*, 2019). In the fight for eradicating malaria, however, the traditional knowledge of the Artemisia *annua* tea infusion struggles to be recognized by Western science as an effective treatment. Consequently, it encounters barriers when attempting to make its way into scientific validity and the market economy. One can say this position has been taken following the precautionary principle, referring to how a certain treatment cannot be recommended for use "before having enough strong evidence about their effectiveness and safety" (Hausse, 2019, p.23). But there is also a growing debate that highlights other reasons why Artemisia *annua* tea infusion struggles to reach scientific validity.

This paper analyzes the case of the Belgian prohibition of the commercialization of Artemisia *annua* through the lens of three political ecology concepts. Firstly, with the epistemic coloniality perspective, I aim to assert the power/knowledge dichotomies between Western and traditional science. Secondly, through the technocratic lens, I examine who is behind such a prohibition, and argue for the

existence of a techno-elite deciding unilaterally about the future of health. Finally, through the angle of the commodification of nature, I contend that Artemisia *annua* has not seen its commodification potential blossom (yet) for the simple reason that it is not profitable enough to be considered in the market economy.

2. Epistemic coloniality

Through epistemic coloniality, it is the power/knowledge dimension of coloniality that is approached when considering the Artemisia case. To acknowledge this dimension of coloniality, De Sousa Santos (2012) argues for the construction of an Epistemology of the South, in which new processes for producing and valorizing valid knowledges -scientific or nonscientific- would be retrieved, and new relations built among these different types of knowledge. The two premises on which De Sousa Santos' (2012) Epistemology of the South is grounded are the following: Firstly, "the understanding of the world is much broader than the western understanding of the world" (p.51) and secondly, "the diversity of the world is infinite" (p.51). These premises encompass an immensity of alternatives that unfortunately are not (enough) identified by the academic world in the global North. However, an alternative thinking of alternatives is needed. To construct epistemologies of the South, De Sousa Santos (2012) acknowledges the ''sociology of absences", depicting how a certain knowledge -e.g., the non-pharmaceutical Artemisia form of tea infusion- is actually actively produced as non-existent or "as an unbelievable alternative to what exists" (p. 52). This logic of non-existence can be explained by a monoculture of knowledge, consisting in turning Western science as the sole determinant of truth and aesthetic quality, respectively. Conversely, all that is not recognized by this canon of knowledge production is simply declared non-existent (De Sousa Santos, 2012). This section identifies traditional antimalarial knowledge as a victim of monoculture of knowledge.

Acknowledging the existence of traditional medicine in itself is one thing but acknowledging its existence as a knowledge system is another. Through this monoculture, the rule of Western scientific

knowledge is erasing other forms of knowledge systems. In that sense, discourses "constructing certain understandings of what science 'is' and what science 'does'" (Ideland, 2018, p. 784) are still very much alive. By simultaneously casting out what deviates from these geographical places and their inhabitants, the other parts of the world, by default, are presented as underdeveloped and lacking scientific rationality and modernity (Ideland, 2018). Everything cannot be said, but it is crucial to find out what stories are missing as those ones do tell a story as well (Ideland, 2018). More interestingly, analyzing why those stories are missing or who actually writes the existing stories might reinforce this argument, as it is often the stories of the more marginalized groups that are left untold, or are told from a hegemonic perspective (Ideland, 2018).

Artemisia *annua* has been within the traditional Chinese ethnopharmacopeia for 2000 years as its tea treated fever successfully (Weathers *et al.*, 2014). More recently, during the Vietnam War, the therapeutic efficacy of the tea for treating malaria came under the spotlight. However, it is not the Artemisia *annua* tea infusion that eventually conquered the market but rather the ACTs. This thanks to an agreement WHO signed with ACT producers in 2001 in which it was agreed ACTs would be introduced as a requirement and displayed as a front-line treatment in all countries strongly affected by malaria (Lutgen, 2015). Personally, it is still unclear as to why -with the undeniable fact that the infusion worked wonders against malaria back in the Vietnam War- the story of the Artemisia *annua* tea infusion was left untold. When consulting the more conventional channels of information, the plant in its non-pharmaceutical form is considered too "dangerous", "potentially toxic" and "likely to cause serious damage to the health of consumers" (Arrêté Royal, 1997). Moreover, as mentioned above, the WHO does not, in the name of the precautionary principle, recommend the non-pharmaceutical form of tea infusion and wants to see "extensive fundamental and clinical research" (Gruessner *et al.*, 2019, p. 1522) before considering the tea infusion as a global alternative for eradicating malaria (Crutzen, 2017).

The results of the Artemisia tea infusions have not only shown to be effective to treat malaria, but even shown to be more effective than the standard drugs (ACTs), sometimes even more benign than some types of ACTs (Gruessner *et al.*, 2019). Moreover, it is a cheap and accessible herb that, unlike other antimalarials, has never undergone the phenomena of resistance[3] (Lutgen, 2015). As we can see, when searching beyond the discourse of Artemisia as a "dangerous plant", the dissonant voices are numerous[4], claiming the wonders of Artemisia tea, displaying scientific evidence (Daddy *et al.*, 2017 ; Gruessner *et al.*, 2019 ; Weathers *et al.*, 2014) and promoting the cultivation and use of the plant worldwide. Drawing on this evidence, health organizations and institutions in Belgium and beyond are invited to reconsider their position on Artemisia's use and commercialization.

Summarizing, the (untold) story of the Artemisia *annua* tea infusion illustrates an "unequal distribution of power - the power to determine whose knowledge counts and for what purpose -" (Jasanoff, 2016, p.100). Thus, if we consider how the monoculture of knowledge operates, the precautionary principle might simply be an excuse used to avoid exploring further this alternative in the fight for eradicating malaria. Depicted as something for which not much knowledge is gathered yet, this lack of understanding on the Artemisia *annua* tea infusion struck deep chords of anxiety within a society that is dependent on knowledge as the basis for any decisive action (Jasanoff, 2016). In the name of the precautionary principle, such unknowns can be more easily outcasted from scientific agendas, but the question is to whom is it unknown? It might be unknown by some due to a lack of perspectives. In fact, history points towards those in positions of power that would ignore, or reject as unfounded or lacking scientific validity, claims deviating from the conventional frameworks of thought (Jasanoff, 2016). Unlike the ACTs as the standard drug for eradicating malaria, the Artemisia *annua* tea infusion has not been given such attention, confirming the theory around the monoculture of knowledge. This case underlines how every single narrative sheds light on some (wanted) aspects and casts

(unwanted) others into darkness. The next section further explores why some narratives are told, or untold, by identifying who might be behind them.

3. Technocracy

ACTs is strongly recommended because of the existing evidence with regards to their effectiveness and safety. The Artemisia infusion, instead, lies beyond -if even considered as a scientific knowledge- the limits of scientific inquiry. But how come ACTs have entered that realm and the Artemisia infusion has not? Through a technocratic lens, an attempt is made to answer this question.

A technocratic approach recognizes that "technological inventions are managed and controlled by human actors, but presumes that only those with specialist knowledge and skills can rise to the task" (Jasanoff, 2016, p. 19). Besides the federal political power declaring Artemisia *annua* as a "dangerous plant unsuitable for human consumption" (Arrêté royal, 1997, art. 2), from a broader perspective, a World Health Organization's statement is clearly against it as well (WHO, 2012). Although WHO only gives recommendations, its Member States -including close to all countries worldwide- work in collaboration with such organism (Ingabire, 2021), thus support from the WHO is crucial. Notwithstanding the effectiveness of the traditional tea has been proven several times since the WHO's statement, its position has still not been reconsidered since then. The question remains as to why that would be. When analyzing the political relations behind the scenes, I argue for the presence of a techno-elite, representing only certain interests, and putting together policies, or administrative bureaucracies. This hinders the expansion of the Artemisia tea infusion for treating malaria while effectively promoting the more profitable standard drugs.

The business runs as follows: the WHO establishes administrative costs of a certain percentage (3%) for every sale of a certain pharmaceutical treatment. Moreover, until very recently, it established a situation of monopoly with a producing laboratory granting an exclusive qualification in the market for fixed doses of

ACTs (Lutgen, 2015). This sort of collusion between the WHO and the pharmaceutical industry calls to reconsider the global health body's neutrality. Indeed, the voices of experts might well be influenced by conflicts of interest, hindering such a body to have the necessary independence to consider alternative solutions against malaria. Arguably, it looks like the WHO is the promoter and intermediary between the pharmaceutical industries and the developing countries (Lutgen, 2015) rather than the neutral organization putting as a priority the health of people, regardless whether with conventional or traditional medicine.

Therefore, public policies in the hands of a techno-elite arrive to contradictory results. The WHO could help in setting up extensive fundamental and clinical research in order to better explore these recent results in favor of the Artemisia *annua* tea infusion as treatment for eradicating malaria (Gruessner *et al.*, 2019). But instead, it is not recommended and, in the name of the precautionary principle, simply argues for more scientific evidence to be gathered without actually financing such clinical research (Ingabire, 2021). All of this happening while it continues to support pharmaceutical companies and promote the conventional ACT drug in various developing countries.

4. Commodification of nature

This section reflects on why Artemisia infusions would not be considered as knowledge that counts. In our capitalist societies, a commodity entering the market with its price tag appears perfectly obvious. In fact, nature-as-commodity has existed since the pioneering stage of capitalism (Peluso, 2012). A commodity can be defined as something that is useful and can be turned to commercial advantage, and when analyzing the market economies we inhabit, virtually everything is a commodity (Watts, 2013). Commodification refers to "the process by which more and more of the material, cultural, political, biological and spiritual world is rendered as something for sale" (Watts, 2013, p.393).

The therapeutic efficacy of artemisinin -active component

from the plant Artemisia *annua-* was discovered in 1972 thanks to the professor Tu YouYou, expert in TCM. In 2015, Tu Youyou was awarded the Nobel Prize in Physiology or Medicine for those antimalarial discoveries (Czechowski, 2020). It is one of the few substances from TCM that found a way to enter Western medicine (WHO, 2012). If we apply the same logic -i.e. usefulness, scientific evidence- the tea infusion would perfectly fit in that logic of commodification, even so when it is said to have appealingly promising results against malaria. Moreover, the cost for Artemisia *annua* production is six times less expensive than the cost of ACTs (CHU, 2018), while Ginsburg & Deharo (2011) confirm that the road to antimalarial development, with such natural compounds, "could be shortened considerably, since it is much easier to approve the use of extracts than that of their active ingredients" (p.4). But despite all these appealing and conclusive points of attention, the Artemisia *annua* tea infusion has not been recognized by the WHO as an antimalarial drug to be researched.

Considering the latter, it is hard to explain why a natural element -a crude extract of a plant, not even an active component like artemisinin- have not undergone the logic of commodification? Arguably, the answer to this question lies in the fact that the "business" of the pharmaceutical companies is under threat when such a simple, accessible, and cheap alternative is suggested for the antimalarial market. ACTs, although unaffordable for most of the malaria patients (Weathers *et al.*, 2014), entered the market in the countries affected by malaria thanks to the increased financial support by the Global Fund (GFATM) (Ingabire, 2021). Consequently, with the introduction of the Artemisia *annua* tea infusion, pharmaceutical companies would lose an important amount of 'market share' as their client population would drop with the reduction in the amount of sick people (Ingabire, 2021). This argument can be reinforced with the comments of an ex-director of the WHO, German Velasquez, in the documentary "Malaria Business" (Crutzen, 2017), revealing what I would call programmed obsolescence applied to human health. He states: "For the last twenty years or so, the pharmaceutical

industry has been producing drugs to treat diseases, but not to cure, perhaps because it is much more profitable to have a patient who is a customer" (Crutzen, 2017). In the words of Phillips & Rozworski (2019): "it is the long-term therapy -not cures- that drives interest in drug development" (p.6).

Indeed, "capitalist firms are primarily interested in the exchange value of the commodities they produce rather than their use value" (Castree, 2005, p.159), so if something is useful but not profitable, it will not be produced (Phillips & Rozworski, 2019). From this analysis, and when comparing to other treatments, it can be assumed that the plant Artemisia, at least for its tea infusions, is not circulating in the market because there is no (enough) profit behind it. When analyzing its role within the logic of commodification, it could be argued that as long as that plant cannot be profitable enough for pharmaceutical companies and health organizations (WHO), it will (consciously) be given a hard time to reach scientific validity.

5. Conclusion

Although Belgium has displayed the Artemisia *annua* as a "dangerous plant", studies have shown that the tea infusions from that plant, as an alternative towards eradicating malaria, deserves more attention. With regards to the power/knowledge dimension of coloniality, there is an evident monoculture of knowledge in which the spread of Western scientific knowledge is erasing other forms of knowledge systems, among which the Artemisia *annua* tea infusion within traditional medicine. From the perspective of technocracy, the promotion of more profitable standard drugs in fighting malaria and the hinder for such a traditional knowledge to blossom, questions the presence of a techno-elite as the locomotive of the health system. Following up on the previous concept, within the logic of commodification of nature, it could be argued that because the Artemisia *annua* tea infusion would not be profitable enough, it is given a hard time to reach scientific validity.

All in all, it can be concluded that more attention should be

given to this traditional knowledge, and the power dynamics behind it, realizing that the prohibition of the commercialization of the Artemisia *annua* plant is more than purely a question of precautionary principle. In the fight for eradicating malaria, the pharmaceutical companies promoting conventional drugs rather than the, equally deserving, Artemisia *annua* tea infusion, means basically putting business on top of public health.

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Notas

[1] Various adjectives exist to describe this medicinal system of knowledge (conventional, allopathic, modern, mainstream, orthodox, biomedicine, etc.). For the purpose of this paper, western science/medicine is used.

[2] Arrêté royal relatif à la fabrication et au commerce de denrées alimentaires composées ou contenant des plantes ou préparations de plantes, 1997.

[3] Referring to the ability to withstand something (e.g. a bacteria resistant to a treatment).

[4] See for instance the work done by la Maison de l'Artemisia https://maison-artemisia.org/, or the Belgian NGO IDAY https://iday.org/

Recepción: 11 de abril 2022
Aceptación: 23 septiembre 2022
Versión Final: 27 septiembre 2022

https://doi.org/10.22370/pe.2022.13.3446

Superplants: hegemonic masculinities holding up the green transition

Superplantas: masculinidades hegemónicas que sostienen la transición verde

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Abstract
This paper departs from a consideration of an emerging popular discourse concerning a plant-based mining technology called agromining. Agromining is defined by its inventors as a method for mining metals with plants, encompassing a chain of procedures from the cultivation of metal-absorbing plants to the marketing of the pure metal extracted from them. It is being developed and marketed by scientists as an environmentally friendly alternative to traditional mining that can support technological shifts needed for the green transition. Following the characterization within this popular discourse of the agromining plants as "super", the hegemonic logics behind it are exposed and used to unpack the agendas, political biases, and naturalized ideologies behind green technologies. This paper investigates why being super is so appealing and what logics are upheld and reproduced by prioritizing superness. Three central elements construct the main argument of this paper: hegemonic masculinity, the depoliticization of climate change, and the lack of a plural democratic space to address the global ecological crisis. These points give context to why superness may be an attractive quality for a green technology and help to problematize the neutrality of science-backed solutions to ecological problems. Possibilities for refusal and resisting both hegemonic masculinity and the dominant logics that reproduce it are discussed with contributions from Feminist, Queer, and Crip theories.
Keywords: agromining, hegemonic masculinity, climate change, technological innovation, superness, green transition. JEL: O33, Q54, Q55

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Resumen

Este artículo comienza por la consideración de un emergente discurso popular ligado a una tecnología minera basada en plantas llamada agrominería. La agrominería se define por sus inventores como un método de extracción de minerales con plantas, abarcando una cadena de procedimientos que van desde el cultivo de plantas absorbentes de metal hasta el marketing comercial del metal extraído. Esta siendo desarrollada y promovida en el mercado por científicos como una alternativa amigable con el medio ambiente a diferencia de la minería tradicional, que puede sostener cambios tecnológicos necesarios para la transición verde. Siguiendo la caracterización de estas planas como 'super', proveniente del mencionado discurso popular, las lógicas hegemónicas detrás de él son expuestas y utilizadas para desvelar las agendas, sesgos políticos, e ideologías naturalizadas detrás de tecnologías verdes. Este artículo estudia por qué ser 'super' es tan atractivo y qué lógicas se mantienen y reproducen cuando se prioriza la superioridad. Tres elementos centrales construyen el argumento principal del documento: masculinidad hegemónica, la despolitización del cambio climático, y la falta de espacios democráticos plurales para abordar la crisis ecológica global. Estos puntos entregan antecedentes para explicar por qué la superioridad puede ser una cualidad atractiva para una tecnología verde a la vez que ayudan a problematizar la neutralidad de soluciones científicas para problemas ecológicos. Posibilidades para rechazar y resistir masculinidades hegemónicas y las lógicas dominantes que las reproducen son discutidas en dialogo con contribuciones de las teorías Feminista, Queer y Crip.

Palabras clave: agromineria, masculinidad hegemónica, cambio climático, innovación, superioridad, transición verde.

1. Introduction

"we can conclude that it is not super powers per se that makes one super, but rather being super entails being *superior*. In this sense, the state of being super seems to include a relative element: the relation to that which is not super" (Wandtke & Anton, 2011).

In January 2017, a documentary film with the title "Superplants - How to make money by saving the environment" made by the Franco-German television network ARTE was broadcast to European audiences (Uhrig & Krause, 2016). This film documented and circulated the promises of an emergent agricultural technology called agromining (Figure 1). Agromining is defined by its inventors as a method for mining metals with plants, encompassing a chain of procedures from the cultivation of metal-absorbing plants to the marketing of the pure metal extracted from them (Van der Ent et al., 2020). It is being developed and marketed by scientists as an environmentally friendly alternative to traditional mining. Currently, agromining cannot replace traditional mining as the scale of the global demand for mined materials outweighs the yield possible from this plant-based alternative (Uhrig & Krause, 2016). However, agromining is described as extremely beneficial when it comes to lower-grade ores that would not be profitable enough to interest mining with traditional methods. This is because agromining costs significantly less than traditional mining to deploy and is in turn able to accumulate high yields of metal from areas that would not be financially interesting to larger-scale mining (2016). Additionally, this technology can be used to remediate soils contaminated by metals thus providing two services: remediation and extraction (The University of Queensland Sustainable Minerals Institute, 2017). This film, "Superplants", describes agromining as an almost magical process that due to the findings of modern science might provide a way to mitigate pressures on the environment caused by a global demand for mined materials. The protagonists of this film are the special plants that are able to accumulate metals from soils. Plants with these propensities are known to scientists as hyperaccumulators. In the film, however, they are given the additional appellation of *superplants*.

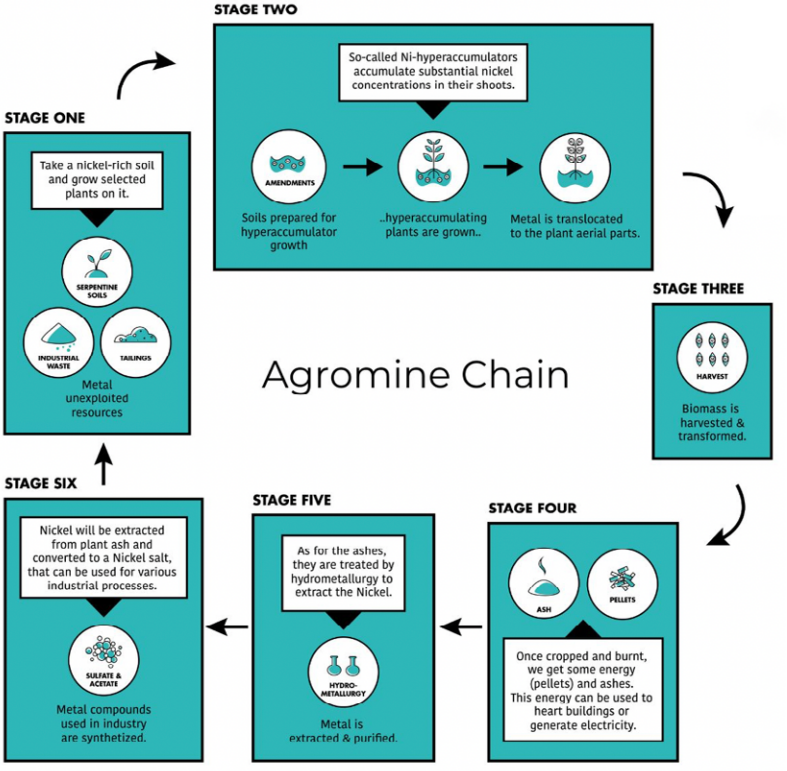

Figure 1. *The Agromining Chain*. Life Agromine Project via LinkedIn. May 2021. https://www.linkedin.com/company/life-agromine/posts/?feedView=all

Growing pressure to adapt and prepare for global change creates conditions wherein action is expected. Whether on an individual, local, national, or international scale, specific pathways are being developed to respond to this global change. These pathways are entangled with existing and often dominant ideas about the world and are therefore in no way neutral (Kenis & Lievens, 2015). In the present case, though the moniker *superplants* can be dismissed as a marketing strategy devised to interest a broad audience, it is worth considering what narratives are being perpetuated in its adoption. In particular, the draw of "superplants" and the quality of superness

when framed within the growing relevance of technological solutions to problems of climate change produces the question: why is superness so appealing? What logics are upheld and reproduced by prioritizing superness?

Prominent feminist scholars Rosi Braidotti (2019) and Elizabeth Povinelli (2016), identify the pervasive preferencing of an "ideal" being, the cis-White Man rooted in the origins of modern science. The dual logic upheld in this hegemony is 1) the naturalization of the human form as white, cis-male and able-bodied and 2) the exclusion of all deviations from this ideal form as "deviant" and subpar. This hegemonic logic has serious consequences as power, access, and resources have historically been distributed along gendered and racialized lines as well (MacGregor & Seymour, 2017). Critical ecofeminism and masculinity scholars have demonstrated how the dominance of this ideal human has a significant effect in the discourse on climate change because of the influence of hegemonic Man's beliefs about nature (Graad, 2017; MacGregor & Seymour, 2017). These beliefs define a relationality with the environment where "humans are somehow separate from and above nature, and humans must control nature (…) [through] physical, economic, political, military, ecological, psychological, emotional, and sexual dominance." (Gaard, 2017, p. 107). When it comes to the innovations developed by technoscience these "dominant political discourses compel scientists to create assessments that work within these discourses" (Turnhout et al., 2014, p. 583 in Carton, 2019). Furthermore, these technologies involve "the articulation of problems that are legible to, and the proposal of solutions compatible with, dominant political and economic logics." (2019, p. 761).

Asking why superness is so appealing as a quality for tackling climate pressures implies that approaches to climate change should not be taken for granted. In particular, techno scientific innovations such as agromining are embedded in political and social processes that are often overlooked or naturalized in the name of innovation and progress. Though much has been written in the field of innovation studies about the positive value of technology for social and political

transformation, less attention is paid to the disproportionate advantage of certain actors over others with less influence (Van Dyck et al., 2021). It is therefore important to consider what hegemonic logics are serviced by the discourse of superness in order to think through which agendas are prioritized, and more importantly which bodies are potentially ignored and made vulnerable.

In this paper, two examples of the mediatization of agromining are presented to reveal political processes and dominant logics that are being upheld. These examples are used to problematize the categorization of these plants as "super". By considering this discourse through the lens of hegemonic masculinities, I show that the characteristics that make this technology marketable uphold and reproduce patriarchal logics elevating the category of men over others.

The task of this paper is to think through the deployment of superness as a marketable quality. In doing so, the attraction of both superness and the technology it describes is questioned and located within a context of hegemonic masculinity. This approach yields two discussions. Firstly, appealing to techno-scientific solutions as a way to unify a population behind hegemonic logics and against the threat of climate change depoliticizes the debate, thereby making it challenging to contest without becoming marginalized. And secondly, superness when read through a queer lens presents a way to resist or remake artefacts of hegemonically masculine discourse.

This argument has implications for the development of techno innovations that address symptoms of climate change. In problematizing the hegemonic masculinities embedded in a popular agromining discourse, I aim to make visible and politicize latent gendered ideals dominating techno-scientific solutions to climate change.

2. Literature: superness in context

2.1 Hegemonic masculinity and climate collapse

"Indeed, in every society on the planet, those with the most wealth and power to shape and control the natural world—for better or worse— have been men" (MacGregor & Seymour, 2017, p.4)

The naturalization of a dominant form of masculinity with idealized values and practices that is legitimized by society at the cost of subordinating other categories is called hegemonic masculinity (MacGregor & Seymour, 2017). Hegemonic masculinity is a concept used by feminist scholars who aim to problematize an ideal form of masculinity and examine the category as shifting, plural and contested (MacGregor & Seymour, 2017). Because of the historic privileging of men as the ideal of Man (humans), the fact of their gender has benefited from being categorically unmarked (MacGregor & Seymour, 2017). In other words, "Man" was the accepted unit of measure for all things. Other *marked* categories are distinguished because of their deviations from the "naturalness" of white Man, and do not have the privilege of escaping this marking. Such marked categories include people of color, women, and queer people (MacGregor & Seymour, 2017). Being an "unmarked" category makes it seem natural that white men have historically held the most influence over the natural world. Recent engagements with the study of hegemonic masculinity are helping to reevaluate Western ideas about the modern world and show that the study of Man that informed these ideas was determined by a biased vantage: the perspective of white men (2017).

The concept of hegemonic masculinity has specific relevance for discussions of the environment as it can reveal a model of human dominance over nature that is largely upheld in dominant social discourses. This can be simply represented by the following configuration, "eight billionaire white men control the same amount of wealth between them as the poorest half of the Earth's population" (MacGregor & Seymour 2017, p.11). Further, a 2022 Oxfam report says that this disparity is increasing (Oxfam, 2022). Masculinity scholar Jim Fleming recalls the historical precedence of

men dominating nature through science, technology and innovation and calls for a consideration for the political, social and ethical consequences that underpin this action (2017). Fleming traces Sir Francis Bacon's *The Great Instauration*, a program to catalog and control the natural world. Bacon was a misogynist who excluded women from his study of nature and used overtly sexualized language: "science is a chaste and lawful marriage between Mind and Nature that will bind Nature to man's service and make her his slave." (Bacon, 1642 quoted in MacGregor & Seymour, 2017, p.26). With this foundational paradigm of modern science in mind, it is important to question how it might be upheld in the application of techno-scientific solutions to climate crisis. In making visible the political biases underpinning modern science, these authors (Fleming, 2017; MacGregor & Seymour, 2017) problematize the neutrality of scientific discourse.

2.2 Innovation and resistance

Important scholarship has been generated on the project of refusing the neutrality of innovation discourses (Van Dyck et al., 2021). Van Dyck et al. (2021) unveil a climate wherein innovations are a "gift" from the technoscience that has to "be accepted" without the option of refusal. The authors explain that the practice of innovation is an "evolutionary branching process" that should involve a space for refusal in order to avoid impartial results and advocate for alternative pathways to those of hegemonic interests. Criticizing the lack of plurality and divergence present in innovation processes they remind us that:

> [j]ust like other sociopolitical dynamics, research and technological change involve societal choices among a diversity of possible pathways. Path-dependency and lock-in as well as multiple power laden dynamics of entrenchment tend to reinforce those pathways favored by incumbent interests. (Van Dyck et al., 2021, p. 3)

Scholars in the field of queer and Crip innovation bring forth another example wherein a dominant interest (white men) is

unable or unwilling to invest in realities that center on so-called marked categories such as racialized groups, women, queer folks, and disabled communities. The "Crip Technoscience Manifesto" (Hamraie & Fritsch, 2019) agitates the normativity of ableism in technoscience discourse by claiming the agency of disabled people as "experts and designers of everyday life" who also "harness technoscience for political action, refusing to comply with demands to cure, fix, or eliminate disability" (Hamraie & Fritsch, 2019, p. 2). Likewise, queer interventions in hegemonic discourses reveal their narrow scope and demonstrate how alternative perspectives and marginalized voices should be part of innovative processes in order to more adequately match the plural societies they address (Maris, 2017; Weder & Samanta, 2021).

2.3 Climate change and the political

A further aspect that gives context to the agromining mediatization case study, is the depoliticization of climate change. Following Kenis and Lievens (2015), this can be broken down into three central points: climate crisis lacks a subject of change; the object of climate crisis is too vast (potentially includes everything); and the unquestionable basis of climate policy on 'nature' as an external issue that can be addressed by objective scientific study. The dominant approach to address the complexity, extent, and diffusion of ecological crises is through technical or economic means (Kenis &Lievens, 2015). This is due to the fact that these means "give the impression to be neutral and could therefore help to avoid potential adversity and find common ground" (p.25). Likewise, this appeal to the results of scientific inquiry as a consensus-making pathway to address conflicts such as climate crisis, makes it very difficult to disagree with this position (Swyngedouw, 2010). Any disagreements that might occur are then framed within the narrow scope of ideology. This in turn means that the person disagreeing "on non-technical, but social, moral or political grounds will have to undertake extra efforts to create a space where her point can become visible or hearable as such" (Kenis & Lievens, 2015, p.27). Appealing to the

path of consensus by defining one's arguments as post-politics or apolitical is another approach used by actors in the climate struggle (Kenis, 2021). This is done, according to Kallis and Bliss (2019), in an effort to avoid the gridlock of right-left political positions and resurrect a myth of unity. However, according to Kenis (2021), without the agonism of the political, wherein division and conflict are mobilized, "the constitutive dimension of conflict and plurality" are devalued (p.137). It is therefore argued by Swyngedouw that an inclusive space for effective dialogue to occur is lacking:

[i]n the context of environmental issues, we similarly need to create a plural and democratic space in which it becomes possible to make visible the existence of conflicting and alternative trajectories of future socio-environmental possibilities and of human-human and human-nature articulations and assemblages. (Swyngedouw, 2010, p.228)

3. Discussion: Agromining in the media

The media attention to agromining has been significant in recent years (Adams, 2019; Eppendorf, 2021; Morse, 2020; Rochmyaningsih, 2020; Yan, 2020). This is due in part to the funding of developments in this agrotechnology, as well as to the emergence of a market for green technologies that can support a transition to a green economy (Nkrumah et al., 2022). The "Superplants" film mentioned in the introduction to this paper, is one such mediatization. It was broadcast in German, French, and English at several film festivals where it won the UMSICHT-Wissenschaftspreis (The University of Queensland Sustainable Minerals Institute, 2017). The rhetoric used in this film recalls a sense of wonderment reminiscent of David Attenborough documentaries, emphasizing the incredible possibilities that these superplants provide. Promotional material from the film summarizes this sentiment:

Just imagine there were superplants. Plants that are quite normal in appearance but possess almost magical abilities. Little plants, which could help humanity get to grips with some of its most intractable problems: environmental pollution, shortages of

raw materials, malnutrition, poverty and the destruction of the rainforest. These superplants exist! So-called hyperaccumulators are plants that store so many heavy metals in their leaves that you can use them to decontaminate soil. Others can even be used to gather the accumulated raw materials. (Mediawave Festival, 2017)

As the promotional blurb succinctly describes, these superplants are found interesting by the filmmakers and innovators they follow, because of their potential to offer a service. In particular, it is their potential to attend to the infrastructural pressures of global mining and agricultural industries that contributes to their superness. In the film, the superplants are portrayed as miraculous and special (Figure 2). While other species of plants would normally die in metal-toxic soils, these superplants can survive and even thrive. Informed by this super-capacity, they are framed within a narrative of heroism, where the superplants come to the rescue of humanity (Mediawave Festival, 2017). The characteristics that qualify them as "super" are their hardiness, resilience, and hyper-capacity. These are historically gendered terms, meaning that they characterize a specific ideal of masculinity, an ideal that is currently and has been historically hegemonic. As explored above, it is important to interrogate *superness* within the context of hegemonic masculinity to demonstrate that current discourse around agromining largely reproduces the dominance of this hegemony.

Figure 2. Agromining scientist Antony Van der Ent pictured in the film interacting with the superplants behind a fog of smoke using undescribed practices to study the unique capacities of these plants. From *Superplants: How to Make Money by Saving the Environment. Uhrig, Klaus, and Till Krause, dirs. 2016..Florianfilm GmbH.*

To discuss this further, I describe another example of the mediatization of agromining as "super". This will help show that in addition to upholding a hegemonic version of masculinity, it also reproduces the problematic that is the depoliticization of climate change by articulating a singular pathway towards a solution. This singular pathway is defined by the employment of science and innovation (Kenis, 2021). The publication in which agromining is rendered as super, is material from a marketing campaign produced by the German industrial giant, Schaeffler. This publication is titled, "Tomorrow: EXPERIENCING TECHNOLOGY WITH SCHAEFFLER." It aims to show how the company is thinking holistically about its role in affecting change: "When it comes to the big picture – currently being unhinged by the powerful game changer of climate change – the whole world needs to join forces: the political, industrial and business community, and each and every one of us" (Brauer et al., 2019, p.3).

Claiming that climate change is a problem facing the whole world may seem like a neutral and obvious position to take based

on what science tells us, but political ecologists and philosophers contest this (Žižek, 1994; Kenis, 2021). Firstly, as Kenis (2021) lays out, Žižek's definition of the "masterstroke of ideology" is its success in appearing neutral, apolitical, or "merely scientific" (p.141). That a focus on a "pure science" will deliver apolitical answers to planetary challenges hides the fact that "science is a political and social process that cannot be free of values" (Kallis and Bliss, 2019, p.473). Instead, scholars of political ecology ask what political processes shape scientific knowledge production about environmental change (Robbins, 2019). By bringing "apolitical" ecologies into the realm of the political, issues such as ecoscarcity, modernization, valuation and conservation can be viewed as sites of power and governance (2019). When this criticality is applied to the *Tomorrow* publication's trust in innovation as a solution to planetary challenges, the existence of an ideology of technocratic solutions is laid bare and the political act of enacting this ideology as a business strategy is highlighted.

The second point related to the *Tomorrow* publication's framing of climate change as a common enemy that requires "joining forces" is the notion that a pathway for addressing climate crisis involves consensus. As discussed in the literature section, this claim has been problematized because it homogenizes the subject of climate change. This homogenization erases the violence, so-called solutions, and ontological understanding of climate change (Kenis, 2021; Kenis & Lievens, 2015; Yusoff 2018).

4. Conclusion: Queer Openings

The two sites of mediatization discussed above are examples of where a political dimension has been (consciously or not) concealed, and the agendas rendered neutral and uncontestable. So far in this paper, I have tried to show how dominant logics are sustained and reproduced in these agendas and their strategies. The concealed political processes I have attempted to bring forth are (a) describing an emergent agro-industrial technology as "super" reproduces hegemonic masculinities; (b) techno-scientific solutions are not neutral but rather politically determined; and (c) appealing

to techno-scientific solutions as a way to unify the population against the threat of climate change relocates the discourse beyond the political, making it difficult to resist or offer alternatives without them being dismissed as purely ideological. In addition to this critique, it is also interesting to consider what openings or possibilities come with these mediatized sites.

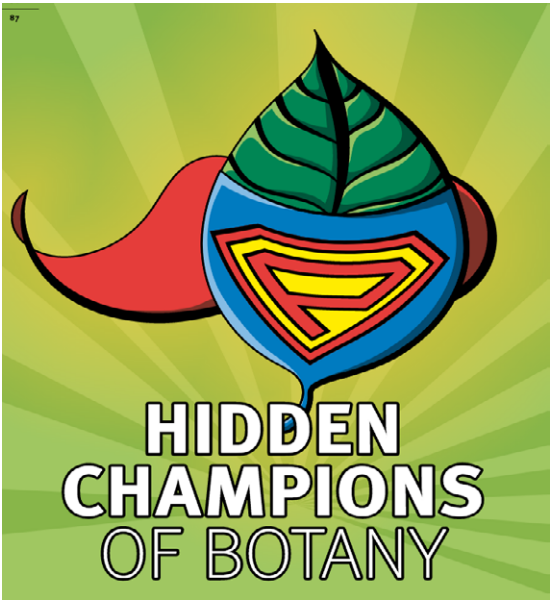

Figure 3. *Hidden Champions of Botany*. Brauer et al. (2019, p. 87)

One such opening could be explored through the topic of queering superness. Though superness in the context of agromining can be simply a synonym for the prefix "hyper", accompanying graphics and a hypermasculine discourse point to a specific correlation between superplants and superheroes (Figure 3)[1] . Beneath the caption *Hidden Champions of Botany* is the following subtext: "In the near future, inconspicuous plants with natural superpowers might help us stop famines, the destructive overexploitation of raw materials or climate change" (Brauer et al., 2019, p.87). However, another related article emphasizes this superness in a different light

by appreciating the plant's abnormal thirst for metals, with the title "Some Like It Toxic" (Eppendorf, 2021). This title plays on the subversive queer classic "Some Like It Hot" (Wilder, 1959) and recalls the film's famous last moments (Figure 4) wherein Daphne (Jack Lemmon's character in drag) reveals to her unwitting partner Osgood, that she is in fact not a woman - to which Osgood responds, "Well, nobody's perfect!" demonstrating an inclusivity and perhaps even homosexuality unprecedented for that time (Corcoran, 2019).

Figure 4. *"Some Like It Hot"* (Wilder, 1959) closing scene Daphne (Jack Lemmon's character in drag) reveals to her unwitting partner Osgood, that she is in fact not a woman - to which Osgood responds, "Well, nobody's perfect!". Unknown image author, unknown date, https://www.pinterest.com/pin/129126714292665025/?nic_v3=1a55L1IGZour

Theoretical traditions such as queer theory, crip theory, posthumanism and feminist criticism continue to develop new ways of reading and subverting "deviations" from the ideal human that are useful for an alternative trajectory for agromining's superness (Camp, 2017). Tracing the narrative of a gay superhero, Lisa Camp (2017) recalls Derrida's claim that the deconstruction of a discourse such as hegemonic masculinity requires: (a) affirming this discourse exists and operates and (b) that reworking this discourse can mean reappropriating the tools that made this discourse dominant. In the case of the superness of agromining, focusing on the abject appetite for toxicity as a quality of superness could lead to new openings for what superness can be (Author, 2021). Though the extent to which this queering of superness is possible will depend on how it is ultimately represented in the media and internalized as well as applied in people's experiences of agromining, I consider it an opening to rethink these dominant logics. In closing, to truly prepare and materialize a green transition, face global ecological crises and make such queer openings more than critical exercises, it will be necessary to, echoing Kenis and Swyngedouw, demand a democratic space that allows for plurality and conflict. Without this step, the dominant logics, crucially including hegemonic masculinity, that played a leading part in shaping these crises, will continue to be reproduced.

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Notas

[1] Hyper- and super- are doublets, or two words with a shared etymology in Latin and Greek, that have entered modern usage through both roots. T. F. HOAD "hyper- ." The Concise Oxford Dictionary of English Etymology. . Encyclopedia.com. (June 3, 2022). https://www.encyclopedia.com/humanities/dictionaries-thesauruses-pictures-and-press-releases/hyper-1

Recepción: 11 de abril 2022
Aceptación: 23 septiembre 2022
Versión Final: 27 septiembre 2022

Nota de Investigación

http://doi.org/10.22370/pe.2022.12.3317

A panoramic view to the evolution of three scientific communities in chilean academia 2012-2022

Una mirada panorámica a la evolución de tres comunidades científicas en la academia chilena 2012-2022

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Abstract
The scientific community (or the academic profession) is one of the key players in the global and local dynamics of R&D and affects enormously the performance of contemporary societies. Nevertheless, historical, and institutional conditions strongly affect the magnitude and form of scientific and technological production in the various scientific communities around the globe. During the 20th century, the scientific community has been described as Merton's CUDO, followed by Kuhn's notion of paradigm, and finally in terms of post-normal science debates, mode two, and triple helix. This paper compares two measurements (survey-2012, and survey 2022), describing the evolution of a set of characteristics, especially incentives and values, in three scientific communities (astronomers, sociologists, and molecular biologists) as representative of three epistemic practices: exact sciences, natural sciences, and social sciences. After an introduction describing the context of knowledge production in Chile, the paper compares results from both surveys, trying to understand the differences and aspects in common in a transversal way through three dimensions. The results are the outcome of two online surveys applied to a statistically representative of the communities studied.
Keywords: scientific communities, evolution, university research, values & incentives

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Resumen

La comunidad científica (o la profesión académica) es uno de los actores clave en la dinámica global y local de la I+D y afecta enormemente el desempeño de las sociedades contemporáneas. Sin embargo, las condiciones históricas e institucionales condicionan de modo importante la magnitud y forma de la producción científica y tecnológica en las diversas comunidades científicas del mundo. Durante el siglo XX, la comunidad científica ha sido descrita como el CUDEO de Merton, seguida de la noción de paradigma de Kuhn y, finalmente, en términos de los debates científicos modo 2, post-normal y triple hélice. Este artículo compara dos mediciones (encuesta de 2012 y encuesta de 2022), describiendo la evolución de un conjunto de características, especialmente incentivos y valores, en tres comunidades científicas (astrónomos, sociólogos y biólogos moleculares) como representativas de tres prácticas epistémicas: ciencias exactas, ciencias naturales y ciencias sociales. Luego de una introducción que describe el contexto de producción de conocimiento en Chile, el artículo compara los resultados de ambas encuestas, tratando de comprender las diferencias y los aspectos en común de manera transversal a través de tres dimensiones. Los resultados son el producto de dos encuestas aplicadas en línea, estadísticamente representativas de las tres comunidades estudiadas.

Palabras claves: comunidades científicas, evolución, investigación universitaria, valores e incentivos

1. Introduction

The accelerated transformation of society, economy, and culture as an outcome of technological change does not occur homogeneously in today's world. The dynamics vary at the center and the periphery of the international system. But there are undoubtedly elements in common, and one of them is the role of R&D, which causes affects the economy (Solarin and Yen 2016; Jaffe et al. 2013; Lee et al. 2011). The scientific community or the academic profession is one of the key players in the global and local dynamics of R&D. Nevertheless, historical, and institutional conditions strongly affect the magnitude and form of scientific and technological production in the various scientific communities around the globe (Gantman 2012; Gonzalez-Brambila et al. 2016; Kumar et al. 2016; Meo et al. 2013; Walshok and Shragge 2015; Powell et al 2012). During the 20th century, the scientific community has been described as Merton's CUDO (Merton 1973), through Kuhn's notion of paradigm (Kuh 1970) to post-normal science debates, mode two and triple helix. From the socioeconomics thinking, there are various ways of understanding scientific activity but by categories and theories that emerged in the global north. It turns out that scientific communities are frequently conceptualized from Eurocentric frameworks. The result of that implies that there is an important probability to misunderstand the phenomena. In a situation where countries belong to the global North or global South, the gap replicates in countries that belong to the global south as well.

For that reason and others, this paper has its origin in a sort of inductive and empirical way. We have no reason to start with theoretical assumptions about the functioning and development paths of Chilean scientific communities. However, it is obvious that we must consider the knowledge background in the field of sociology of science and STS, because the globalization of scientific entrepreneurs tends to homogenize research practices all over the world, and, indeed, tends to increase collaborations patterns. Nevertheless, is there an alternative interpretation, more pertinent, from the global south?

2. What do "scientific communities" mean today?

The history of science in Latin America is not characterized by the process of creating new ideas or theories and, in general, is a social history, labeled as colonial science. Thus, we do not focus on the process of diffusion of ideas as Kuhn (1970), Latour (1999), Collins (2004), or today´s networks-science frameworks. Our work is closer to Mullins's approach (1972) but not dependent on it.

The conceptualization of scientific communities is broad. A multitude of approaches have been developed. Since Merton's (1973) and Mitroff's (1974) definitions of scientific community are value-based, the discussion has many ramifications. During the sixties, the Kuhnian paradigm arises and opens the window to a variety of interpretations from the sociology of scientific knowledge up until the present as Latour and others have shown. The diffusion problem was one of the favorites in the analysis of S-shaped growth curve, the role of informal communities—sometimes called "invisible colleges" or "coherent groups" in the organization of scientific research (Keuchenius 2021). Since the 2000s, the availability of both data and sophisticated analytical techniques has reinvigorated the field of science studies, allowing researchers to study the development of science on a larger scale in terms of geographical and temporal parameters.

The last element to keep in mind is that the incentives problem is a subject that arises from the literature associated with academic capitalism, which is, in my view, just an expression of neoliberal industrial, educational, and scientific policies. Thus, we are going to utilize the value-incentives approach because, in scientific trends today, it seems that the scientific profession is a kind of mix of vocational ones, related to profound psychological features and socialization issues, and incentives ones, related to neoliberal contexts in a global institutional competition.

The thesis is that the formation of scientific communities in Chile is directly related to the development of Neoliberalism in three ways: a) due to the (individual) demand of the universities to the State to increase advanced human capital to be able to compete

better globally (university rankings); b) because the sudden increase in the number of scholarships in global elite universities occurred in 2008 (1), due to an investment calculation of the sovereign funds of the government abroad (it was cheaper to spend abroad than within the country) and, c) because the awarding of grants and prizes for publication had an individual voucher design, without connection with institutional projects or with the industry sector.

This scheme made it possible to double the number of scientific publications between 2007 and 2014, mainly due to a policy of incentives (bonuses) for academics who published in indexed journals and the growing number of fellows who pursued postgraduate studies, where the paper is a requirement of titling and constitutes a positive antecedent for future tenure applications (2).

It is affirmed that the democratic opening and both public (training of advanced human capital) and private (researcher management) policies on the part of the university system, allowed the 21st century to constitute a true network of scientific communities in all the OECD knowledge areas. In 1990, only 2 communities (astronomers and physicians) published more than 100 papers per year; in 2014 there were 34 areas of knowledge where there were more than 100 publications per year and in 2021, the areas of knowledge cultivated in the country with more than 100 publications per year were 92 (WoS). Although it is an indirect measure, the number of publications allows us to affirm that there has been a substantial increase in the *density* of the national scientific community, which probably has all the conceptual requirements to be called that way, namely: it is an extensive set of networks of research groups (university or companies); with well-defined "cognitive" centers in terms of theories, protocols and referential people for the disciplinary field; with well-defined common institutional spaces, with important government support and organized financially and thematically in "Scientific Societies" to develop periodic scientific meetings. Generally, in visual terms, scientific communities are identified today as groups of journal articles dealing with the same topics and citing each other. Thus, such networks show communities

characterized by agreement, a common core community with high citation to each other, and many minuscule communities with little structural significance. This contrasts with other communities that are in dispute within a scientific field. Depending on the scientific field, some form " contentious networks " and others "consensual networks ".

The paper is a product that is the result of a complex set of factors. In other words, for the network to exist, it requires an infrastructure and the functioning of a set of operations, which differ depending on each discipline. In the case of biological sciences, laboratories; in the case of astronomers, observation facilities. In the case of the social sciences, additional institutional structure is sometimes required. As indicated by Boianovsky (2021) in the case of the economics, the installation of the United Nations Economy Commission for Latin America (CEPAL), to become part of the transnational economics community, connected through international hierarchical networks. Thus, in this case, it is a broader meaning of "community", formed by different actors: policy-makers, trade union consultants, producers/ employers, economic journalists, politicians, philanthropic associations, and government agencies with other professionals involved (sanitarians, educators, engineers). All these actors produce information and are engaged with scientific research results. Also, in all cases, a demand is required either from the economic system or from the political system.

The XX's century notion of science as a collective enterprise is characterized by quality standards and an autoregulation system in which research agenda and criteria for resources allocation for scientific activity are decided by the research community itself. This was one of the features of Kuhn's concept of "normal science." In the words of Michael Polanyi's (1962) concomitant article, the scientific community should work as a "Republic of Science", with its own rules to produce knowledge. In Latin American countries, many scientific communities developed by copying this ideological framework, but their distance to the main centers of knowledge production made the task enormously arduous. Adoption, adaptation, and creation of knowledge were paramount difficulties.

Now, what forces set a scientific community in motion? The discussion in the first half of the 20th century put the accent on collective values, then in the second half of that century on institutional determinants, and today, on organizational incentives and individual motivations. All these accents can complement each other. Even today. But undoubtedly, they are influenced by the demographic, political, and economic characteristics of each period or cycle, especially within the university institution. Furthermore, not all these characteristics functioned in the same way in all geographic-political contexts: the center operates very differently from the periphery, which is cognitively dependent and colonized.

Since the beginning of the republic in the 19th century, there were scientists in Chile dedicated to government advisory work, later moving on to professional and technical education at the end of that century and during the beginning of the 20th. Small scientific research groups only appeared in the middle of the 20th century and their development was cut short by the 1973 coup d'état. Therefore, it can be affirmed that the scientific community emerged in Chile thanks to Neoliberalism, globalization, and the massive use of Internet, starting in the mid-nineties, and consolidating less than 10 years ago (Gibert 2011). Is the Chilean scientific community one of "excellence"? This question is very difficult to answer because excellence is not a value-free term because "it is highly contested and has acquired a set of specific meanings determined by dynamic interplays between science policy, funding instruments, research culture, performance assessment methodologies, internationalization of science, and public accountability regimes" (Kraemer-Mbula et al 2020, 5). However, the data indicates that there is a consistent strengthening trend over time. The paper explores some characteristics of this consolidation in three disciplines from different OECD areas.

3. Dimensions of evolution

In this paper, we only consider three dimensions of scientific communities' evolution: human capital features, scientific productivity, and values and incentives of the scientific profession.

Our primary focus in 2012 was the size and characteristics of the community. Due to the Chilean scholarship program (named Becas-Chile), and the greater support to universities from the democratic governments since the 90s, the community's size increased considerably. In the second place, we consider the increasingly higher productivity of researchers. Thirdly, we consider the beliefs of researchers in terms of value and the factors that function as incentives to get the job done. In this sense, we considered two aspects that 40 interviews clearly indicated. First, individuals involved in scientific activities seem to exhibit a strong intellectual engagement developed since an early age. We might call this Vocational Orientation, constituted by beliefs with values. This made us hypothesize that, in some way, they were in touch with scientific cultural background, probably within their families. Respect and appreciation of science constituted a deep value for them. However, other values such as innovation, autonomy and humanism were important to them. Second, while context pressures to raise money for their institutional budgets were important, researchers were indifferent to these pressures and more concerned about country issues or personal ones. In our 2022 collected data, we repeat the main questions to compare data, allowing us to see the difference that occurred over the last 10 years.

The number of researchers is a precise indicator although it is a difficult measurement. In 2012, we include all faculty even if they have not won a research grant at all. In 2022, we use a restricted sample of researchers who have won at least a one-time national research grant. The second aspect is the participation percentage of women in scientific activities given the fact that science in peripheral countries is still principally a male-identified profession. The third indicator is age average because it determines a kind of energy and novelty results for a national scientific community as a hypothesis. The percentage of researchers with foreign graduate certificates may indicate how strong or weak graduate studies offered in local universities are, and how attractive this offer can be to applicants.

The productivity dimension contains three indicators. The first is the number of publications in the last 10 years which give us an approximate picture of the system's dynamics. The metrics evacuated by informational multinational platforms are accurate and allow segregated data which allows several calculations. One of the most valuable data provided by our both surveys is the year of the first WoS published paper, and the year of the first grant obtained by researchers. Given the variety of funding, it is difficult to obtain data without truly scientific respondents.

The third dimension constitutes values and incentives. The conceptualization of values can be reached through Merton's CUDEO, analytical sociology's BDO, or Boudon's framework as well many other approaches but, in this preliminary research, we made a typology of values and incentives according to scientists themselves. Even though academic literature emphasizes the importance of work values to job satisfaction and commitment, some researchers separate values from incentives while others treat them as multidimensional, often identified as having extrinsic and intrinsic elements (Gesthuizen et al 2019). Here, we prefer to distinguish values from incentives.

Boudon has said that explaining values is a major question for the social sciences and philosophy. The first statement in his 2017 book is "We spend a good deal of time wondering whether or stating that "X is good, fair, legitimate ... "or rather "bad, unfair, illegitimate": These value statements, these axiological beliefs regulate our social life. They are a basic ingredient of our personal identity" (Boudon 2017, 1). The discussion is embedded in at least three intellectual traditions: Philosophical with Nietzsche; sociological with Marx, Durkheim, and Weber; and psychological with Freud. Our approach is sociological, in terms that we suppose that "we believe that X is good because it serves our class/community/group interests and routines". Indeed, many older authors tend to see values as functional illusions for certain purposes, sometimes transcendent, sometimes pedestrian. In this sense, the values of the scientific community as they have been conceptualized as part of their personal and social

identity, refer to questions of beliefs. In the case of the values of the scientific community, we can understand that the Mertonian CUDO (communism, universalism, disinterestedness, and organized skepticism) possesses strategic and procedural rationality which, as Weber had already warned, insists heavily on the role of rationality, immoral life, and history.

On the other hand, incentives refer to external issues, factors that can facilitate or hinder the achievement of objectives related to our main activity. "Incentive" comes from the Latin word *incentivum*, which means stimulant or goad. It was also associated with the instrument that gives the tone, which became "that which provokes or excites to start something", an instigating tool of any nature. In the context of our work, an incentive could be equivalent to an expected reward. Since expectations are the atom of social life, they are connected by the history of the actors, but also by the vision of the future that they have built. In particular, the vision for the future that the researchers must obtain a reward.

However, values (axiologically speaking) tend to be controversial. In this sense, our investigation does not establish a fixed dogmatic or operational definition but is oriented to the identification and description of those beliefs that inspired the emergence of scientific activity in an individual (which motivated their decision to pursue the scientific profession) and those opportunities provided by the immediate environment that allows the maintenance and development of the individual scientific activity.

The analytical sociology approach can be useful for such purposes since its basic model is the triad of beliefs, desires, and opportunities, the BDO approach (Hedström and Swedberg 1998; Manzo 2014). In our semantics, beliefs can be values and opportunities can be translated as incentives. Unfortunately, we cannot develop this optic in this preliminary work.

Therefore, in terms of values and incentives, we only elaborated a list of each one provided by the scientific community itself. That list was made after 40 interviews with outstanding colleagues from these three disciplines in a preliminary stage of our research

project. The results show only the main values and incentives which inspire researchers in their own words. Thus, we divide values into scientific values such as knowledge production and vocational values (scientists say: I was born to do this). These latter values or high cultural values, characteristics of well-educated people, include autonomy, sense of achievement, innovation, and humanitarian or ecological concerns. Finally, we define traditional values as security, fun, money, and a search for empowerment.

Incentives were listed in the same way as values. Also, we divide them into three types. First, personal incentives (curiosity, research derived from their doctoral dissertations); second, professional (main issues from disciplinary topics, scientific prestige); and third, national issues, such as development problems to be solved, the interest of the government and private local agencies or industrial research.

4. Data and method

The population under study is made up of researchers from three scientific disciplines who have developed academic research (2012 survey) and FONDECYT projects in the period from 2015 to 2020 (survey 2022). The disciplines are the following: astronomy/astrophysics; biology, and sociology. Each one of them is representative of larger academic tribes: exact sciences, natural sciences, and social sciences.

We used two data sets. A historical one, from 2012 and another from May/June 2022. In the last data collection, we decided to narrow the population to this period since these were the most recent years available and it is highly probable that these researchers are currently active.

According to official numbers of ANID (R&D national agency), the active researchers in 2022's Chile (all disciplines) are 9946, defined by an average paper production of one paper 80% of the time since the researcher is indexed in the DATACIENCIA platform (created in 2008).

Therefore, we extract the 2022 population of 1,080 (641 biologists, 169 sociologists, and 270 astronomers) from people who obtained a FONDECYT grant from 2015 to 2020. After that, we obtained the mail of them and sent each one a letter explaining the survey's objectives and including the connection to a web page containing the questions. The first message was sent on May 15, 2020. Between May and June, the survey was re-sent two more times. The answers were coming gradually until they were 302 at the time of closing. There was thus a 27,9% answer rate that, for this kind of survey, is somewhat above the usual rate which is around 20%. The sample obtained is probabilistic, and statistically representative of the study population, with a 95% confidence level and a 5.65% margin of error.

4.1 Descriptive Data of the Sample Compared to the Study Population

The distribution of cases in the sample in terms of discipline is detailed in the following table, comparing it with the reference population. There is a correspondence between sample and statistically appropriate population.

Table 1. Main researchers for FONDECYT projects, in the population and the sample, by discipline.

DISCIPLINE	STUDY POPULATION 2002–2011 % (freq.)	SAMPLE 2002–2011 % (freq.)	STUDY POPULATION 2015–2020 % (freq.)	SAMPLE 2015–2020 % (freq.)
Exact Sciences ASTRONOMY	10,6 (87)	10,6 (35)	25,0 (270)	16,0 (49)
Natural Sciences BIOLOGY	49,6 (408)	44,5 (146)	59,3 (641)	60,9 (187)
Social Sciences SOCIOLOGY	39,8 (328)	44,9 (147)	15,6 (169)	23,1 (71)
	Total 100.0 (823)	100.0 (328)	Total 100.0 (1.080)	100.0 (307)

5. Results

The main results show a comparative view of how there have been differences between the 2012 and 2022 surveys according to human capital features, productivity, values, and incentives.

Table 2: data of comparative study (three scientific disciplines)

Dimensions	Indicators	2012	2022
Human Capital	Number Of Researchers (3)	823	1.080
	% Of Woman	31.7	37.6
	Average Age	48.3	46.8
	% Of Foreign Graduate	54.3	48.2
Productivity	Publications Last 10 Years (4)	7.462	16.953
	Average Year - First Wos Paper	1999	2004
	Average Year – First Grant	1994	2015
Values (6) And Incentives	% Highest Scientific Value (Knowledge Production)	84	92
	% Highest High Culture Value (Autonomy)	37	64
	% Highest Tradicional Value (Fun)	21	59
	% Highest Personal Incentive (Curiosity)	51	71
	% Highest Professional Incentive (5)	44	80
	% Highest National Incentive (National Need)	46	51

As can be seen, the number of researchers with productivity increased in 10 years, the average age decreased, and female participation improved.

From the point of view of human capital, there was an important shift: the number of graduates from Chilean universities exceeded the number of graduates from foreign universities. This is due to significant support based on government incentives for universities from the Ministry of Education. It is also due to mezzo-level reputational capital accumulation strategies in institutional and micro-level research groups. Obviously, in a competition scheme, it is also explained as a source of financial resources for the institutions.

From the point of view of productivity, it can be said that in the 10 years before 2012, researchers published an average of 0.91 papers per person per year, while between 2013 and 2022 the researchers published 1.57 papers per person per year. Total publications doubled in all three areas. In the national system, the

effect was similar because while in 2008 the total number of WoS publications was 5,500, in 2014 it was 9,600 WoS publications, reaching 2020 more than 17,000 papers in more than 200 research areas according to the Web of Science. However, in 2016 there was a break in the citation trend: while in 2008 the total number of citations was 120,000 (adding WoS, Scopus, and Scielo) and in 2014 it reached 158,000, in 2016 it dropped to 145,000 and continued falling to 72,000 in 2018. It may be that time allows the scientific contributions of Chilean papers to be valued, but so far, the trend is towards a decrease in citations and an increase in publications.

The interpretation of this may be due to several factors. The return of new Ph.Ds because of the Chile Scholarships (2008) generated such dynamism that, strictly speaking, we could speak of the creation of a national academic market. Most of the returned fellows exhibited a habitus of paper-oriented intellectual activity and the exclusive dedication to postgraduate studies during the duration of the fellowship generated productivity that, on average, is unsustainable later once integrated into the activity. university labor that includes classes, management tasks, extension, and connection with the external environment. This productivity, in my opinion, gave rise to draconian contracts where new hires were required to have similar productivity to what they had during their postgraduate studies, which forced researchers to use various survival strategies such as a) *paper salami* (preparing several papers by chopping the original material into many parts, b) the *re-fried*, that is, writing the same paper many times, changing the semantics and paraphrasing, and c) the *copy -paste paper*. Rapid synthesis of already known material with small new flavors. The result of this could well explain the drop in citations during the last 6 years. That is the hypothesis. A variant (which can be mixed with what has already been said) is that the existence of economic incentives was the reason for the entry of new researchers into the various fields. That is, academics who did not publish before, even though they had the training to do so, began to publish to earn publication bonuses. Thus, a greater competition was generated by economic

incentives for publications, going from " publish or perish " that had a strictly academic and reputational meaning to " publish for money " or " publish or get fired ", which is nothing more than a case of anomalous professionalization, as a survival strategy or an economically inspired short-term tactic.

A change of pre-eminence of values to a change of pre-eminence of incentives in interaction with values, depending on equations such as career stage, type of disciplines, and others that are not addressed in this study and remain as future research projects. Naturally, the external factor may be the most important: the tendency of platform capitalism for metrics and data accumulation allows for the incessant increase in the number of scientific journals titles, and an increasing number of editorial boards with aspirations to be included in the most recognized indexes such as WoS, Scopus, and others. An idea of the large volume of published papers can be obtained from Ulrich's global series directory which lists more than 260,000 scholarly and academic Journals. Added to this is China's growing interest in publishing regular scientific journals. On the other hand, the existence of a competition for local and international students by universities in all parts of the globe feeds on international rankings, for which institutions recruit researchers with greater public visibility on academic and non-academic platforms, including Google scholar and Twitter. The publication generates visibility that results in reputation and finally in hiring or a rotation of Science-Stars among universities, whether they are elite.

On average, the 2012 sample published their first paper in 1999. If the average age of the sample was 48, that means that they published their first WOS paper at approximately 35 years of age. In contrast, the 2022 sample published their first paper in 2004. If the average age of the sample was 47, then they published their first paper. WoS at 29 years old. They are communities socialized in the research and publication process earlier than 10 years ago. Probably, it is due to the pressure of the media through their tutors or to postgraduate training micro strategies more oriented to training in

the publication of articles as a prerequisite to the master or doctoral thesis.

The same time reduction is observed in the award of the first research fund. While the 2012 sample on average wins its first grant at age 30, the 2022 sample wins its first grant at age 40. This may be due to the dynamics of greater competition in contexts of growing institutional budget reductions. Today there are more applicants to research grants, applicants are more qualified, and grants competitions have higher entry requirements. Additionally, the massiveness of the university system has meant that internal support for research has decreased in the context of growing budget restrictions, especially in the public university system, which obtains less than 15% of financial support from the State for its operation, reaching in some cases 5%. Institutions increasingly ask their researchers to compete in national or international grant competitions.

On the other hand, the relationship between both events changed direction: while in the 2012 sample, the average researcher first won a grant and 5 years later published their first WoS paper, in the 2022 sample, the average researcher first published a WoS paper and 9 years later won their first grant.

In terms of values and incentives, the choices made 10 years ago remain the same, but the numbers increase considerably in some indicators. Thus, knowledge production is the main choice of 92% of all respondents. The same happens with autonomy as the most important value of high culture framework, which changes from one-third to two-thirds of the choices. Fun, as a traditional value of a good job, tripled in 2022 the amount of 2012 respondents.

The incentive structure in 2012 was homogeneous because numbers did not show important differences. But in 2022, the inspiration for national needs was much lower in comparison with personal and professional incentives. It could be said that "the republic of science" (Polanyi 1962) it is winning over "science for society" (Bernal 1939) in ideological terms. One difference between the 2012 and 2022 surveys is the professional incentive: while

scientific prestige has 44% in 2012, it now is 69%, below the 80% reached by the incentive to work in hot disciplinary topics. These are communities in focus.

Both values and incentives show a strong scientific identity in these three communities under examination.

6. Conclusions

The data set show that Chilean scientific communities have enough researchers. They are highly productive and have detailed scientific routines very similar to consolidated scientific communities from the Global North. External factors that increase the quantitative indicators of researchers move faster than ever such as a larger numbers of scientific journals and the strength of competition between institutions, in developed countries as well in developing ones.

Even if our study is focusing only on three disciplines, data seems to confirm the idea that the national scientific community is larger enough to contribute in paramount importance to the economy, social peace, and culture in Chile. However, greed is imbricated in a few incentives which work at the micro, mezzo, and macro level. Economic incentives and draconian contracts are doing a good job making researchers publish many papers, but with a low impact (and lower quality, as we may suppose).

One open question is to what degree the Chilean scientific communities overlap with already existing scientific networks and communities abroad. This is a dominant question because it shows the robustness and sustainable features of contemporary Chilean scientific research.

Acknowledgements

The paper was read firstly at the annual meeting of the Society for the Advancement of Socio-Economics, SASE 2022. The author wants to thank FONDECYT project N° 1095032 which provided the financial resources to make the 2012 survey. The author also wants to thank the support from the Research Center in Innovation,

Economic Development and Social Policies (CIDEP-UV) to make the 2022 survey.

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Footnotes

1. Between 2008 and 2009, 3,100 scholarships were awarded for postgraduate studies to students with an average age between 29 and 32 years. That amount is almost 10% of the total number of scholarships awarded in Chile from 1980 to date. This leap explains part of the consolidation of the national scientific community.

2. This doubling between 2007 and 2014 is consistent from several perspectives: a) a total number of works with at least one author residing in Chile; b) Total number of works, excluding the most productive area and with the highest levels of collaboration, that is, astronomy/astrophysics; c) a Total number of works with authors from Chilean institutions, excluding the first 100 most important foreign institutions; and d) a total number of papers with authors exclusively from Chilean institutions (Source: WoS). This is the "return/return plan" effect for fellows, which begins around 2010-2011. Of the 36,557 postgraduate scholarships awarded by the system from 1980 to 2022 (www.conicyt.cl/becasconicyt/estadisticas/informacion-general), a total of 26,308 were awarded between 2008 and 2017, more than 70% (Gibert and Pérez 2020). This indicates a defined political will and a public policy with coherent financing.

3. The numbers are not comparable, but they give an idea of the increase in the number of researchers. The 2012 sampling frame was more inclusive since it also considered academics from the respective university departments that had not awarded local grants

(FONDECYT). The 2022 sample frame only considered researchers with FONDECYT awards, which implies that each researcher had an outstanding career and/or productivity.

4. The publications of the last 10 years were extracted from the Web of Science. This take into account publications where at least one of the authors was a resident in Chile. The WoS categories considered were <astronomy/astrophysics> <sociology> <biotechnology applied microbiology> <biochemistry/molecular biology>.

5. The 2022 questionnaire included an extra variant in the question about professional incentives. Thus, while in 2012 "continue with my doctoral research line" reached the highest percentage of responses as an incentive for their work (43.6%), in 2022 the alternative "investigate central topics of my discipline" was added and reached the highest percentage of responses as a professional incentive (79.6%), surpassing by 10% "to continue with my doctoral research line" (69.4%).

6. The alternatives that reached the highest scores in the question about values, both in the 2012 and 2022 questionnaires, were the same.

Normas de Edición para los Colaboradores

La Revista Perfiles Económicos es una publicación semestral (julio-diciembre) de la Escuela de Ingeniería Comercial de la Universidad de Valparaíso, que tiene como propósito dar a conocer los avances de la investigación económica en sus diferentes perspectivas. La publicación incluye los problemas teóricos, metodológicos y analíticos de áreas tan relevantes como: pensamiento económico, historia económica, finanzas, innovación, política económica, medio ambiente, desarrollo sustentable, globalización económica y regionalización. El ámbito geográfico de sus artículos lo constituyen, preferentemente, la realidad de Iberoamérica, así como aquellas áreas, más amplias, que se vinculan con la anterior.

Perfiles Económicos publicará artículos originales, resultados de investigación cuantitativa y cualitativa. Además, contará con una sección de notas de investigación destinada a difundir avances de investigación (tesis de maestría, doctorado y proyectos de investigación en curso). Finalmente ofrecerá un espacio para reseñas bibliográficas, de textos que se hayan publicado los últimos tres años con respecto al número más reciente de Perfiles Económicos. Las reseñas pueden ser de un título o un conjunto de hasta 3 títulos que desarrollen un problema de interés común.

Todas las secciones aceptan colaboraciones en español, portugués e inglés.

Los trabajos con pedido de publicación deberán ser enviados al correo electrónico perfiles.economicos@uv.cl, en formato Word (.doc) u Open Office (.odt), el cual se compromete a hacer acuse de recibo del manuscrito original al autor en un plazo inferior a 10 días.

Todos los artículos originales serán revisados en una primera instancia por el comité editor, para evaluar si se ajusta a la línea editorial y a las normas de edición solicitadas. Esta revisión procurará discernir la originalidad, relevancia e interés científico del artículo, para decidir su paso o no a revisión externa. De ser positiva la decisión pasarán, al menos, por una doble evaluación externa anónima, en la que se preservará el anonimato del autor. Ello será notificado al autor en un plazo inferior a 60 días a partir del acuse de su recepción.

La revisión por pares con el formato doblemente ciego no implica compromiso alguno de aceptación. Únicamente luego de haber recibido los informes solicitados Perfiles Económicos decidirá sobre el artículo. Los especialistas tendrán ocho semanas para revisar los manuscritos.

Después de la evaluación completa del manuscrito, los autores recibirán, a través del Comité Editor, comentarios de forma anónima elaborados por los especialistas. Si los comentarios son favorables, el manuscrito será usualmente aceptado, condicionado a que el autor considere las sugerencias, observaciones y dudas propuestas en las revisiones. Sólo muy ocasionalmente un manuscrito es aceptado sin requerir al menos ciertas revisiones mínimas. Si los comentarios son, mayormente, favorables, pero al mismo tiempo varias revisiones y cambios son sugeridos, el manuscrito será aceptado condicionalmente, solicitando que el autor considere los comentarios y reenvíe el manuscrito revisado. En cualquiera de los dos casos, el plazo para realizar esta revisión es de cuatro semanas. Si el autor realiza los cambios y reenvía el manuscrito, éste será enviado a por lo menos uno de los especialistas anónimos originales. En esta revisión, los especialistas evaluarán los comentarios y cambios realizados por el autor después de haber introducido las críticas originales. En este caso, el proceso de revisión también es realizado de forma anónima. Si

las revisiones del manuscrito reenviado son favorables, será aceptado para publicación. Esta segunda revisión no será desarrollada en más de dos semanas.

Los autores deberán tener en cuenta las siguientes recomendaciones de presentación, cuyo incumplimiento será causa suficiente para la devolución del trabajo:

1) Los originales irán precedidos de una hoja en la que figure el título del trabajo, el nombre del autor (o autores), su dirección electrónica y su afiliación institucional, en caso de tenerla.

2) Cada artículo deberá ir precedido de un resumen en español, portugués y un abstract en inglés, y cada uno no deberá exceder las 200 palabras.

3) La extensión de los artículos no superará las 12000 palabras, tamaño A4 con tipo de letra Times New Roman 12 puntos a espacio simple (incluidos cuadros, gráficos, mapas, notas y bibliografía). Las colaboraciones destinadas a las secciones "Notas de investigación" cumplirán los mismos requisitos, mientras que las correspondientes a "Reseñas bibliográficas" no deberán exceder de 1800 palabras cuando se trate de título único y 4000 palabras cuando se refiera a un conjunto de tres títulos.

4) Las notas se ubicarán al final del artículo y precediendo a la Bibliografía.

5) Las referencias bibliográficas irán al final del trabajo bajo el epígrafe Bibliografía, ordenadas alfabéticamente por autores y siguiendo siempre el siguiente orden: apellido (en mayúscula), nombre (en minúscula) del autor, año de publicación, (entre paréntesis y distinguiendo a, b, c en caso de que el mismo autor tenga más de una obra citada en el mismo año), título del artículo (entre comillas) o del libro (en cursiva), lugar de la publicación y editorial (en caso de libro), volumen y número de la revista. Sólo se incluirán en la bibliografía obras y autores citados en el texto.

6) Si el trabajo contiene un amplio número de referencias a documentación de archivo, material estadístico o fuentes documentales, estas deberán aparecer tras las referencias bibliográficas bajo el título Fuentes.

7) Las referencias en el texto irán a continuación de la cita, indicando entre paréntesis autor, año y página (Ejemplo: North, 1990: 56), y en caso de varias obras de ese autor se las distinguirá con a, b, c, etc. Si se trata de fuentes éditas (prensa, revistas, repertorios documentales publicados por archivos, etc,) se ajustan a la normativa ya conocida. (Ejemplo de referencia de prensa: "El Mercurio", Santiago, Junio 7 de 1970). Si se trata de fuentes inéditas organizadas en instituciones públicas se indicará en primer lugar el nombre de la institución, y a continuación el fondo consultado, cajas y /o carpetas y la numeración o fojas del documento si corresponde. En los casos de papelería de instituciones privadas o públicas que no se encuentre organizada se buscarán las formas que permitan la identificación del documento (Ejemplo: Archivo Nacional de Chile, en adelante ANCH, Fondo Ministerio de Fomento, carpeta 132, agosto de 1894.) En síntesis, las referencias de fuentes inéditas se presentarán de la forma más adecuada para identificar el documento.

8) Las citas textuales, si exceden de tres líneas irán con sangría a ambos lados. En dichas citas los intercalados que introduzca el autor del trabajo deberán ir entre corchetes, para distinguirlos claramente del texto citado.

9) Los cuadros, gráficos y mapas incluidos en el trabajo deberán ir numerados correlativamente, tener un breve título que los identifique e indicación clara de sus fuentes, en ambos casos estando fuera de la imagen.

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