

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 above. 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 amongst themselves as an autonomous exercise 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 Latin America. 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”²². 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 convite³, 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 prioritizing 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, heterogeneity 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.

REFERENCES

- ALIMONDA, H TORO PÉREZ, C. & MARTÍN, F. (2017). *Ecología política latinoamericana*. Buenos Aires, Argentina: CLACSO.
- BENAVIDES, C., & ATTANASOVA, D. (2020). Paro, paz y pandemia en Colombia. In B. Bringel & G. Ipleyers (Eds.), *Alerta global. Políticas, movimientos sociales y futuros en disputa en tiempos de pandemia* (pp.289–301). Buenos Aires, Argentina: CLACSO.
- BOELENS, R., HOOGESTEGER, J., SWYNGEDOUW, E., VOS, J., & WESTER, P. (2016). Hydrosocial territories: a political ecology perspective. *Water International*, 41(1), 1–14. <https://doi.org/10.1080/02508060.2016.1134898>
- BUDDS, J. & LINTON, J. (2014). The hydrosocial cycle: defining and mobilizing a relationa-dialectical approach to water. *Geoforum*, 57, 170-180.
- FALS BORDA, O. (1999). Orígenes universales y retos actuales de la IAP. *Análisis Político*, 38, 73–90. <https://revistas.unal.edu.co/index.php/anpol/article/view/79283>

- ESCOBAR, A. (2015). Territorios de diferencia: la ontología política de los “derechos al territorio.” *Cuadernos de Antropología Social*, 41, 25–28.
- FEDERICI, S. (2019). *Re-enchanting the world : feminism and the politics of the commons*. San Francisco, CA: Pm Press.
- FRAGKOU, M.C., MONSALVE-TAPIA, T., PEREIRA-ROA, V., & BOLADOS-ARRATIA, M. (2022). Abastecimiento de agua potable por camiones aljibe durante la megasequía. Un análisis hidrosocial de la provincia de Petorca, Chile. *EURE*, 48(145), 1-22. <https://doi.org/10.7764/eure.48.145.04>
- FREIRE, P. (1970). *Pedagogy of the Oppressed*. London, UK: Bloomsbury Academic.
- LEFF, E. (2015). Political Ecology: a Latin American Perspective. *Desenvolvimento E Meio Ambiente*, 35(35). <https://doi.org/10.5380/dma.v35i0.44381>
- MARTÍNEZ ALIER, J. (2005). *The environmentalism of the poor: a study of ecological conflicts and valuation*. Oxford, UK: Oxford University Press.
- MOREANO, M., MOLINA, F., & RAYMOND, B. (2017). Hacia una ecología política global: Aportes desde el sur. In *Ecología política latinoamericana. Pensamiento crítico, diferencia latinoamericana y rearticulación epistémica* (pp. 197–212). Buenos Aires, Argentina: CLACSO.
- PERUGACHE SALAS, J. A. (2020). Procesos de configuración territorial y conflictos por el agua en el municipio de Pasto, Colombia. *Collectivus, Revista de Ciencias Sociales*, 7(2), 86–111. <https://doi.org/10.15648/collectivus.vol7num2.2020.2674>
- PERUGACHE SALAS, J. A. (2022). “*El agua es una causa de todos*”: *Transformaciones territoriales e hidrosociales en el valle de Atriz, suroccidente andino colombiano (1930 - 2020)* [Tesis doctoral]. Universidad Autónoma de México, México.
- RED NACIONAL DE ACUEDUCTOS COMUNITARIOS COLOMBIA (2017). *Por el derecho a la autogestión comunitaria del agua; iniciativa legislativa para el*

fortalecimiento y la defensa de los acueductos comunitarios. Bogotá, Colombia. Retrieved from: <https://www.ohchr.org/sites/default/files/Documents/Issues/Water/Accountability/RedNacionalAcueductosComunitariosColombia.pdf>

RED NACIONAL DE ACUEDUCTOS COMUNITARIOS DE COLOMBIA (2020). *Memorias Red Nacional de Acueductos Comunitarios* (1st ed.). Bogotá, Colombia: Fundación Heinrich Böll.

RED NACIONAL DE ACUEDUCTOS COMUNITARIOS COLOMBIA (2021). *Vulneraciones del Derecho a la Gestión Comunitaria del Agua en Colombia. Volumen 1.* Bogotá, Colombia: Fundación Heinrich Böll.

NOTAS

¹ Words of Daniela Ruiz in the 2nd National Congress Agua al Campo 2021 in representation of The National Network of Community Acueducts of Colombia <https://www.youtube.com/watch?v=XOSYAB0njFA>

² National Network of Community Aqueducts video <https://www.youtube.com/watch?v=LAzwZ3TSGq0>

³ Minga and Convite are two traditional forms of collective work from rural communities in Colombia.

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