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Water assemblages in hydrosocial territories: Connecting place, space, and time through the cultural-material signification of water in coastal Peru

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ABSTRACT

This article analyzes how smallholders of Subtanjalla, in coastal Peru, conceive irrigation water as a central element and carrier of hydrosocial relations and territories. We base our analysis on an exploration of the local notions of *agua nueva* and *yocle*. These two notions bind together time, space, nature and culture into specific understandings of territorial connections and reciprocities. Through these understandings water is much more than H₂O. Instead of just representing an economic good or a material input for irrigated agriculture water is seen as a binding element that bridges and brings together the Andean world with that of Subtanjalla in the Peruvian coast. Water is, from this perspective, a lively and always in-the-making composition of humans, non-humans, and more-than-humans in which there is no clear distinction between nature and culture, past and present, object and subject. We argue that water as an assemblage opens up new lines of inquiry into hydrosocial territories and relations across time and space through the departure of a fundamentally relational understandings of water, its use and governance.

1. Introduction

—Several specialists have come and have said that the main problem is that the underground water is being monopolized by the agroindustry—

—Yes, Julio. But for us, that is not the main problem because we hardly use underground water—, continued Lucho Escate Cabrera, a former health ministry worker and current smallholder.

—Exactly, that water is not for the *chacra*; it is for the people. The water that is below, on top of ... how do you call it? ... the water table ... is water without force, water that is more for the body of humans. On the other hand, the water for the *chacras* is the one that comes from above, from the mountains— added El Soldado.

We were talking about water and the related challenges local smallholders of Subtanjalla perceive as we waited in the fields for the arrival of the *agua nueva* (new water).¹ This is what local *campesinos* call their irrigation water, which is diverted from the Ica River in coastal

Peru for watering their *chacras* (smallholder fields). The Ica River is fed with water from the Andes and has been used for centuries to maintain societies and agricultural production in the desert of the Ica Valley. In the last forty years, the Ica Valley has radically transformed as a result of the unprecedented expansion of the agro-export sector and related increased water demands (Damonte and Boelens, 2019). Most water policies in Peru have focused on developing irrigation and augmenting water supply for ‘modern’ agricultural production, mostly along the Peruvian coast (e.g. Rasmussen, 2015; Vos and Hinojosa, 2016), through large scale irrigation systems and related water transfers from the Andean watersheds (e.g. Hommes et al., 2020; Lynch, 2012, 2019; Mills-Novoa and Taboada Hermoza, 2017; Mills-Novoa, 2020; Stensrud, 2019a. Cf. Baud et al., 2019; Stensrud, 2019b). These policies and the growing water demand concerns that drive them are, as we show in this paper, far removed from the understandings of water of the smallholders of Subtanjalla.

Based on the recognition of multiple ontologies, in this article we

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¹ According to the Subtanjalla smallholders, the term “new water” is used to refer to water from the Andes, specifically rainwater. The rains renew the water in the lagoons and these, in turn, fill the rivers with this new water which, after traveling through long canals, is used to irrigate their farms.

explore the Subtanjalla's smallholders understanding of water. We do so by engaging with the notion of hydrosocial territories as the result of the entanglement of a multiplicity of water assemblages, which can be defined as the process of composing connections between a multiplicity of heterogeneous social, cultural, natural, material and immaterial elements which interrelate through, in and around water (Barnes and Alatout, 2012; Tozzi, 2021; Yates, Harris & Wilson, 2017). Through this notion of water assemblages, we recognize diverse ways of experiencing, knowing, understanding, interacting, and relating to concrete practices linked to water and its use and governance (Aubriot, 2022; Jepson et al., 2017; Li, 2013; Linton & Budds, 2014; Wilson & Inkster, 2018). The relations among humans, nature, and technology, involving particular modes of mutual belonging among humans, water, and place, make from this perspective 'what water is' and how it binds together hydrosocial relations and territories (Boelens et al., 2016; Hommes et al., 2019; Hoogesteger, 2013, 2017). As a result, water is conceived and explored here as a fundamentally relational entity that can assemble simultaneously in different socio-material configurations and meanings. Our analysis shows that for the smallholders of Subtanjalla their irrigation water is much more than just H₂O and a resource for production. It is a lively assemblage of multiple relations and properties that interweave hydrosocial relations, territories, and the past and present giving meaning to and informing practices, relations, collective action and the broader water governance domain.

This research is based on literature review, secondary data analysis, and ethnographic research that started in 2017 and follow-up fieldwork has been conducted since then. Literature review and secondary data analysis provided us with the empirical and conceptual state-of-the-art and background information. The literature reviewed focused on articles and books related to water studies, water scarcity and contemporary debates on the ontological turn in social sciences (For discussions, see, e. g., Boelens et al., 2019; Descola, 2011; Jackson, 2018; Lavau, 2013; Paerregaard, 2018; Paerregaard et al., 2016; Reyes Escate, 2018). In addition to reviewing contemporary debates on these issues, emphasis was also placed on reviewing texts that focus particularly on Ica as an area of study. Ethnographic research and participant observation by the first author, who previously lived for many years in Subtanjalla and conducted fieldwork in 2017, follow-up fieldwork has been conducted since then. Fieldwork time with the subtanjallinos, for this particular research, was around twenty months. The third and second authors have lived and worked for many years in the Andean countries, with fieldwork in coastal and highland regions, among others in Ica.

Semi-structured interviews in Spanish (the native language of the interviewer) involved 15 smallholders, out of a group of approximately 100 smallholders of the district of Subtanjalla with whom group meetings and debates were held. All smallholders are also part of the Water Users Association of the Ica River's Basin. Discussion sessions were organized with the municipal government, inhabitants of the district's center, and the neighboring communities of Longar, Camino de Reyes, and Tres Esquinas. Visiting these communities was based on the "snowball" sampling method. Next, much information was collected through informal interviews and conversations with people who, without previous encounters, were working on their fields or walking around town. The mixture of interviews, conversations, and cohabitation resulted in the revelation of data collected in the form of field notes and audiovisual recordings.

After this introduction, the following section further examines the theoretical basis and debates on water assemblages, hydrosocial territories and the ontological turn in water studies and geography. Section three gives a short introduction to the community of Subtanjalla and the broader developments in the Ica Valley. Section four gives a detailed account of how water is known and experienced by the smallholders of Subtanjalla, focusing primarily on its physical, metaphysical, and political dimensions. Finally, grounded on the theoretical and ethnographic material, we explore how taking into account different understandings of water assemblages could create alternative

hydrosocial relations, territories and governance arrangements.

2. Water, ontologies, assemblages and hydrosocial territories

Following the debates of the so-called ontological turn in geography, water studies and science and technology studies, in this contribution, we aim to look at ontology not as an analytical lens that serves to explain something away or as a binary containment mechanism, but as a tool that allows us to slowly open up to concepts, ideas, and realities that commonly are thought to be unproblematic and univocal, such as water (cf. Huijbens, 2021; Whaley, 2022; Whatsmore, 2013; Yates Harris, & Wilson, 2017). So, by addressing ontology as an "opening" (De la Cadena, 2017), we do not close the doors to any possible definition of water; instead, we open up the possibilities for things, such as water, to be more than what they already are in mainstream sense. When using the notion "multiple ontologies of water," instead of providing a specific a priori definition, we want to emphasize the coexistence of divergent assemblages or compositions of a multiplicity of heterogeneous elements needed for water to exist as people know it.

We build on these notions by using the idea of water assemblages (see also Barnes and Alatout, 2012; Blaser, 2012; McLean, 2017; Tozzi, 2021). The notion of water assemblages asks us to conceive water as a lively and always-in-the-making composition of humans, non-humans, and more-than-humans² (Abram, 1997). We quote Gilles Deleuze, who –in an interview with Claire Parnet– stated that an assemblage is

"...a multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between [...] different natures. Thus, the assemblage's only unity is that of a co-functioning: it is a symbiosis" (Deleuze & Parnet, 1987: 69).

This opens up avenues for understanding water beyond a naturalist ontology or a material definition only. It opens the doors to understand water from the perspective of actors and stakeholders engaged with, relating to, and living with it from day to day. The notions of "multiple water ontologies" and "water assemblages," (for a discussion see, e.g., Bakker, 2012; Flaminio, 2021; Orlove and Caton, 2010; Barnes & Alatout, 2012; Linton & Budds, 2014; Bridge and Perreault, 2009; Wilson, 2019) and the perspective of local actors and stakeholders, resonates with Guattari's warning that tells us that "nature cannot be separated from culture, we must learn to think 'transversally' the interactions between ecosystems, the mechanosphere and the universe of social and individual reference" (Guattari, 1990: 33). Following Guattari (2017), conceiving water as an assemblage from the point of view of the smallholders of Subtanjalla requires us to understand water in its own means of expression,

"We are no longer in front of a subject, an object, and, thirdly, a means of expression; we no longer have a tripartition between the realm of reality, that of representation or representativeness, and that of subjectivity. What we have is a collective assemblage, which is at the same time subject, object, and expression." (2017: 60)

Focusing on ontology as an opening and not as a fixed unit of analysis, and approaching water as an assemblage, helps us to explore water as a socio-natural, territorial, temporal and intrinsically relational entity; as a binding entity that links people, places, culture, nature together in specific constellations that we analyze through the lens of the notion of hydrosocial territories. Boelens et al. (2016:2) define a hydrosocial

² Abram (1997) elaborates on more-than-human beings as those who share a certain degree of humanity but at the same time exceed it. That is, beings that are not biologically human but in someone's eyes have the same characteristics and therefore can establish dialogues with humans but, at the same time, have much more power than humans. Within the logic of the small farmers of Subtanjalla, the beings more than humans that have a relationship with them in their day to day life in the chacras are the witch, the devil, the moon, etc.

territory as:

“... the contested imaginary and socio-environmental materialization of a spatially bound multi-scalar network in which humans, water flows, ecological relations, hydraulic infrastructure, financial means, legal-administrative arrangements and cultural institutions and practices are interactively defined, aligned and mobilized through epistemological belief systems, political hierarchies and naturalizing discourses”.

Although for many political ecology proponents of this literature, hydrosocial territories are driven by socio-economic and cultural-political patterning modes as well as those epistemological belief systems that are strongly political and strategic in nature, we can infer, as Götz and Middleton (2020: 3) put it, that “many of the above processes and factors are suggestive of ontological enactment” (cf. Blanchon, 2018; Dukpa et al., 2018; Höhl et al., 2021; Mills-Novoa et al., 2020; Ulloa, 2020). Exploring the notion of hydrosocial territories in the light of multiple ontologies gives us the possibility, to develop an analysis that concentrates on how water is enacted, related, and given substance, meaning and significance as a grounded assemblage by its territorial actors (e.g., Blanchon et al., 2020; Jaramillo, 2020; Keough and Saidou, 2021; Marks, 2019; Roca-Servat and Palacio Ocando, 2019; Seemann, 2016; Valladares and Boelens, 2019; Vos et al., 2020; Walters et al., 2020; Zeitoun et al., 2016; Vos et al., 2019). In this specific case, we will focus on how Subtanjalla farmers understand and enact irrigation water as a socio-natural and intrinsically territorial assemblage that binds different material and immaterial elements to each other across time and space.

From this perspective, water becomes a ‘multiple’ assemblage that cannot be known univocally, but is enacted differently (cf. Bacigalupo, 2018; Cruikshank, 2007; Duarte-Abadía et al., 2021; Verzijl, 2020; Verzijl et al. 2019). This allows us to expand and go beyond a narrow focus on the political-geographical disputes among different actors in and around hydrosocial territories, while simultaneously maintaining a focus on socionatural entanglements as produced in particular contexts, histories, and power constellations (Boelens, 2014; Büscher, 2022; Giraud, 2019; Kinkaid, 2019; Menga & Swyngedouw, 2018). It opens up to see and understand the enactment processes of each of the territories (see Escobar, 2016, 2018; Goodwin, 2019; Hidalgo-Bastidas and Boelens, 2019; Hoogesteger et al., 2016; Roa-García, 2014). It helps shed light on the ontological aspects of hydrosocial territories, opening the doors to recognize that there are multiple water assemblages that co-exist alongside each other in and around parallel and sometimes intersecting constitutive elements of these assemblages, as is explored below.

3. Subtanjalla’s smallholder irrigators and the agro-export sector in the Ica Valley

Subtanjalla is a “mestizo” district with a population of almost 30,000 (Mananay & Dávila, 2020). It was founded in 1959 by the descendants of the “blacks” enslaved Africans, “cholos” and “serranos” *arrendatarios* (coastal and Andean tenants) of the Macacona hacienda. Traditionally agricultural production is dependent on irrigation from the “La Quilloay” irrigation canal that diverts water from the Ica River. Through the Peruvian Agrarian Reform (in the 1970s), the Macacona hacienda was subdivided, and its irrigated lands were distributed among the workers and other settlers that became smallholders with communally owned irrigated lands. In the 1990s, the legal ownership of land and water was privatized (Oré & Damonte, 2014: 172-173).

Nowadays, the Ica valley and Subtanjalla, as part of it, are experiencing a new period of transformation that is based on the booming agricultural export industry (Cancino, 2012). This industry has blossomed on the intensification of water resources use for irrigation, much of which is dependent on groundwater (see Damonte, 2019; Damonte & Boelens, 2019; Urteaga, 2010). The level of the Ica-Villacurí aquifer has dropped dramatically over the last years with an average decline of 60

cm per year (Oré, Bayer, Chiong & Rendón, 2014: 270; Cárdenas, 2012). If this trend continues, the Peruvian National Water Authority (ANA) has predicted that by 2025 almost 75% of Ica’s arable land will be affected by water scarcity. Over at least the past century, Ica has tried to increase its water supply by advancing project proposals to divert water from the Upper Pampas Amazonian Watershed to the coastal Ica River and its irrigation systems (see Fig. 1).

An increase in water supply came in the 1950s with the Choclococha project, however, agribusinesses have continued to search for new water diversions from the Andes. The proposed and at one moment approved construction of a 73 km long water collector canal (Canal Ingahuasi) that would bring an additional 50 million cubic meters per year for irrigation to the Ica Watershed has stranded due to fierce resistance and mobilization from the Andean communities living and using water in the upper reaches of the Pampas and Ica Watersheds (see for more details Hoogesteger & Verzijl, 2015; Verzijl & Guerrero-Quispe, 2013; Verzijl et al. 2019).

In the current context, the dominant discourse of water in the Ica valley revolves around water as a scarce productive and economic good for agro-export production, falling aquifer levels due to intensive agricultural groundwater use, and insufficient supply of water resources (expressed in cubic meters of water) to supply the growing demand for water of the economically vibrant agro-export sector and the increasing urban demands of growing cities into the future (Oré, 2011; Hommes et al., 2019). However, irrigators in Subtanjalla, who for the most part are old adults, descendants from coastal indigenous (now called in Peruvian slang as *cholos*) and Afro-descendants, have a very different understanding of water, which consequently produces a different relational conception of it. The assemblage that water is and how different actors relate and act on it are worlds apart that often intersect and cleave differently.

4. *Yocle*: A socio-environmental pharmakon

Smallholders in Subtanjalla depend on water from the Ica River, which is fed with water that comes from the Andean highlands, its lakes, and lagoons. This water is referred to as *agua nueva* because a substantial volume of the water flowing in the Ica River comes from the interbasin water transfer of the Choclococha project that has been in use since the 1950 s (Hoogesteger & Verzijl, 2015)³. The smallholders of Subtanjalla perceive this water from the mountains as ‘the’ water for irrigation of their field (*chacras*), as explained below:

—It has strength, it has enough *yocle*, the minerals that make the water brown. The underground water, on the other hand, has already left all the *yocle* for the earth. The earth has already absorbed all the strength and has made it quieter for people to consume. For this reason, differently from the *agua nueva* that comes from the Andes, the underground water is drinkable. The *agua nueva* that is very brown, water with *yocle* as I say, makes the earth powerful enough to pass all its force to the vines. (J. Espinoza, peasant and former Subtanjalla major, personal communication, 2017)

While talking to a neighboring smallholder, Luis Peña, about the *yocle*, he emphasized that we must be careful when using it.

— That the water is brown is just the essential thing, but more than by its color, you should be able to see the foam it brings on the edge

³ In addition to the fact that the new water is so called because it has been the product of the rather new dams and irrigation canals built by the government, it is also called new water because this water is the product of the rains that, during the rainy season in the Andes, “renews” the water in the lagoons making them produce enough to fill the irrigation canals that reach the coast of Ica. It is also important to note that prolonged droughts and the excessive use of surface water by coastal agro-exporters and Andean mines have caused water levels to decrease year after year.

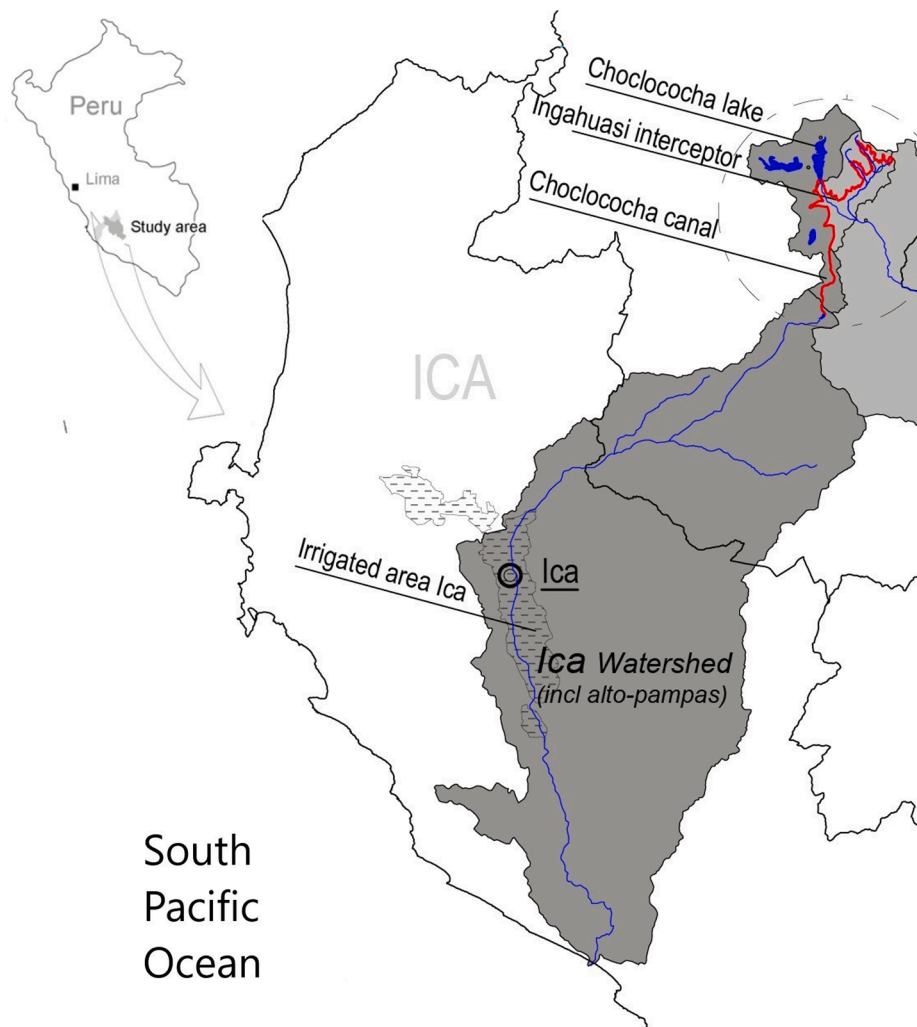


Fig. 1. Map of the Ica Watershed with the main hydraulic works and irrigated areas (○). Adapted from Hoogesteger and Verzijl, 2015

of the wedge it forms. If it brings a thick white foam, that means it comes with *yocle*. But you have to see how thick it is. If it is very thick, you have to let it run because it brings a lot of *yocle*, and that can kill our vines. But if it is watery and fluid, yes! You have to open the gate and let it enter the fields because it is good water (L. Peña, peasant from Subtanjalla, personal communication, May 21, 2017)

As put by Lucho Escate, another Subtanjalla smallholder:

—Well, first, I'd have to explain what *yocle* is. The *yocle* is the layer of nutrients that encapsulates the *agua nueva* within its body. They are the minerals that give it a beautiful brown color, like chocolate. And we know that water brings a lot of *yocle* when, in addition to the brown color, it has a white foam at the end of its waves. If it comes with enough foam, it is good water. And we prefer that water because *yocle* is pure strength. It makes the plants grow more robust and makes the soil well-nourished too".

—And where does the *yocle* come from? How is it formed?—

—The *yocle* is formed because, up in the Andes, the mountains have a lot of life. The people of the Andes have a lot of knowledge and know-how to treat their waters and their lands. They fill them with life because they perform their rituals, they converse, as they say, with their mountains and ... well, all that strength of the Andeans is what comes along with the *yocle*. Here, for example, it is already different; since we are mestizo, we have forgotten many ways to give strength

to the water, so it is crucial to take advantage of the water that comes from up the mountains. And furthermore, in the *agua nueva*, there are enough minerals, salts, and other things that form life. As it goes down, it joins with the nutrients of animals and plants, of other different soils, of the rain, and of the rituals and things that are done in other towns as well ... some places burn the farmlands, and all the minerals that come out of that go into the *agua nueva* ... everything that is found is gathered in the *yocle* as it goes down. That is why the water becomes so thick and brown. All that mixture makes it richer and helps the land become more fertile. And that water, when it arrives here, we use it first to irrigate the fields, to feed the plants, trees, and bushes. But what nobody realizes is that this water is used twice.

—Twice?

—Well, the first time is when we water the fields, right? There, we water by filling the entire pond ... well, we totally fill our farmlands. They are filled with pure brown and cold water. All the engineers say that we are backward people because we use a lot of water. "They flood their lands for no reason," they say about us. They say that the method used by the agro-exporters, of sprinkler or drip irrigation, is better and more efficient because it uses less water than the smallholders' method. They irrigate with underground water; they draw water from the ground with their fancy technology. Once the water is removed from the underground, next to each grapevine, they place a system that releases a droplet that falls every fifteen seconds

throughout the day. But that is very dumb of those engineers who believe we are dumb and backward people. The water they use only serves them once because the drop falls to the ground, and since Ica's earth is very hot, the drop evaporates, and the water just stays on the surface and then disappears. On the other hand, the second time we use water is when the ground absorbs the water on our land's surface. The earth sucks up the water, and that water goes down until it reaches what is called the water table. Before, when I was young, the water was two or three meters below the surface, but now they say it must already be eighty meters down. But, hey! ... when the earth sucks the water, the earth serves as a filter. In its upper layer, all the *yocle* remains, all the strength, minerals, salts, nutrients, everything that plants and trees need.

–And down below the earth goes the clean water, right?

–And below, in the water table, the filtered water remains, which is clean water, like spring water. That water is used by us humans. But these dumb engineers from the agro-exporters use all the water for human consumption and give it to their farms. Filtered, pure water is given to the plants and lands, so now the earth has no strength. Now the earth is not receiving water that contains minerals or salts. And furthermore, those muddle-headed people are taking the water that we are keeping under the ground. They leave us without water and with lands with no strength. They screw the situation twice.

(L. Escate, Subtanjalla smallholder and member of the Water Users Association, personal communication, 2017).

One of the first points to highlight is the presence of the Andes in the irrigation water of the inhabitants of Subtanjalla. This presence is not necessarily tangible. That is, the Andean small farmers are not an actual actor in the Subtanjalla smallholders' practices because nowadays there is not a direct relationship between the Subtanjalla and Andean smallholders. However, the Andes and the Andean smallholders have a profound influence in the enactment of Subtanjalla smallholders' reality and their conception of water as a hydrosocial territorial assemblage that links people, practices and places to each other. In this sense, we should not understand the words of the Subtanjalla farmers as if they encapsulate the current reality of the Andes, but rather understand the realities that emerge from those words.

Ica smallholders' classification says that the *agua nueva* is water for the *chacras*, and the well water is water for human consumption. They made clear that *agua nueva* is better for farmland due to two factors: 1) It encapsulates the strength of nature, 2) it brings with it the strength of ancestral knowledges and practices. Regarding the first point, the smallholders of Subtanjalla say they prefer the *agua nueva* that comes from the mountains because it brings the minerals and nutrients typical of the high Andean soil. In addition to the salts and minerals that come from the soil, the *agua nueva* is enriched by the rains that fall on the snow-capped mountains and the high Andean lagoons.

The encapsulation of the strength of the Andean ancestral knowledges and practices links the small farmers of Subtanjalla to the territories, knowledge, practices and rituals of the Andean people as these "make their lands and waters richer".⁴ They regret that in Ica, there are no longer rituals to call the rains or give strength to *agua nueva*: "Those are things of Andean culture [...] we have already forgotten. Those things they do in the highlands belong to 'the time of before.' Those are things of the people of before, but that is no longer practiced here. That is why water must come from the mountains to bring the *yocle* and essences that they are still able to give it there" said Lucho Escate.

⁴ In myriad, syncretic ways, Andean highland communities relate these water control rituals importantly to, among others, the main protector of their local territory, the 'Apu' or 'Wamani' mountain deity. They engender and control water sources, and as such, life itself (see, e.g., Bacigalupo, 2018; Boelens, 2014, 2015; Li, 2013; Paredes Peñañel and Li, 2019; Verzijl et al., 2019; for the role of Apus in ancient and current Andean societies and water control battlefields).

It is essential to understand that *yocle* is not a stable and definitive essence but an unstable substance that demands that smallholders become an integral part of their composing process. In this sense, *yocle* is a kind of *pharmakon* characterized by its effects (efficacy) and lack of identity (it is not a defined essence). The "pharmakon" can be defined as a substance "whose effect can mutate into its opposite, depending on the dose, the circumstances, or the context, whose action provides no guarantee, defines no fixed point of reference that would allow us to recognize and understand its effects with some assurance" (Stengers, 2010: 29). Hence, *yocle* must be understood as a volatile substance that, if supplied correctly, can cure or, if given the wrong dose, it could provoke death by poisoning (Stengers, 2010: 29).

Therefore, to have the effects desired by the smallholders, they must master the art of dosing *agua nueva* with *yocle*. Too much *yocle* kills the plants, while the absence of it does not nourish the soil. To find out how much *yocle* is needed, the smallholders must pay close attention to what their land and plants want. They have to know their land very well, being in direct contact with their *chacra* because, as people say in Subtanjalla, each land is different, and each will need different amounts of *yocle*. Therefore, the *yocle* could be defined as a force-water that requires to be modulated—that is, that requires the peasant intervention to transform into an element that is beneficial for agriculture. Like in alchemy, the modulation or composition of the *yocle* is established as a mundane, everyday art that is transformed by "speculative gestures"⁵ – sets of very concrete practices and acts that go beyond mere rational abstraction (Debaise & Stengers, 2015). The modulation of the *yocle* is, therefore, "a situated and immanent act of creation concerned with the when's, where's, and how's, with the abstractions and their consequences, with the practices and their dreams, with the events and the possibilities that they create" (Savransky, 2018: 6).

In the mundane art of irrigating their fields while modulating the *yocle*, the smallholders have to carefully assess the color, its hardness, and the humidity of their farmlands. If the soil is very white, it is because it does not have enough minerals. If it is very hard, it is because it needs *agua nueva* that is not so thick. If it is wet, it does not need water but to be plowed. On the other hand, if the earth is very brown, it no longer needs more minerals. If it is very soft, it is because it requires a good quantity of thick *agua nueva*. If it is dry and hot, more than *agua nueva*, what the land needs urgently is water without *yocle*.

In addition to their relation with the land, smallholders 'listen' to their plants. For instance, they are aware of how many grapes their vines produce compared to their production of the previous years and the production of their neighbors. They assess whether the fruit trees are flowering well or if they are inexplicably losing foliage. "We know what our plants and trees need because of the size and flavor of the fruits it produces. If the fruit is very watery and with no flavor, we have put too much water in the land. If the fruit is slow to ripen, it is because it lacks strength. If the fruit is small, it also lacks strength. Our soil is not giving them enough strength. The trees tell you what they need, but you have to know how to listen," el Soldado explained.

Next to, as they say, "dialoguing with their lands and crops", the smallholders carefully look at *agua nueva*. When Rache, the 'bocatomero' responsible for the care and control of the Ica River water intake warns the smallholders that the *agua nueva* is coming, they go to the canals to assess it. Depending on its density and color, in addition to the state of their farmland and their crops, the smallholders decide whether to irrigate their lands or let the water run so that another person can use it or for it to end 'unused' in the pampas (desert) where it infiltrates into the aquifer, which is the place that the small farmers of Subtanjalla consider to be the main water reservoir.

⁵ "One does not decide to perform a speculative gesture, one risks it in so far as one feels 'bound' by a situation, bound to respond to virtualities made perceptible only by the way in which one is bound" (Debaise & Stengers, 2016: 19)

Thus, the smallholders interact and ‘negotiate’ with their environment (especially with their lands, crops, other smallholders, and the *agua nueva*) so that the *yocle* can have the positive effect they seek. When we say negotiate with the environment, we mean that they have to evaluate the ecological conditions (color and consistency of the soil, color and vibrancy of the plants, etc.) to know if their land needs *agua nueva* or if, failing that, it could be detrimental to it. Due to this reason, we could say that the *yocle* compels the smallholders, and all those who accept the challenge of dealing with it, “to think through the middle” (Stengers, 2015); that is, to pragmatically think from what their milieu requires in relation to their own individual and collective desires and possibilities.

Thus, we could argue that, in this case, that *agua nueva* is an etho-ecological assemblage (Stengers, 2005). That is, *agua nueva* is constituted of two poles, where the *ethos* has to be understood as the particularity of being and doing of water and the ecological (or the *oikos*), as the territory in which the *agua nueva* develops. By understanding *agua nueva* as an etho-ecological assemblage we cannot disentangle it from its specific surrounding. According to the smallholders of Subtanjalla, *agua nueva* could not exist independently of its hydrosocial territory and the relations that bind it together. It is due to the collective efforts of the Andean and coastal populations that the *yocle* is formed, which mixed with the Andean spring water, makes *agua nueva*. Likewise, small farmers understand that their hydrosocial territory could not exist as it does today if *agua nueva* were not one of its components. Therefore, *agua nueva* acquires a stable identity, but only through the relationships that are established around it, with it and from it.

Likewise, the *yocle* can also be understood as an etho-ecological assemblage; its existence results and is affected by social practices and the environment, and the environment as well as social practices are formed and affected by its existence. Conceiving both *yocle* and *agua nueva* as etho-ecological assemblages forces us to stop seeing *yocle* as a mere component of *agua nueva*, and *agua nueva* as a mere component of the hydrosocial territory of the Subtanjallinos. Understanding *agua nueva* and *yocle* as assemblages symmetrizes the relationships between heterogeneous elements.

5. *Agua nueva*: A relational socio-spatial and temporal assemblage

From these and other conversations related to the irrigation of agricultural lands, one of the main ideas that caught our attention is the recognition that the smallholders make of the relationships between the coastal valleys and the Andean lands. The smallholders also emphasized this relation when they reminded us of the myth of “La Achirana del Inca,” which tells that in 1412 the Inca Pachacútec arrived with his army to conquer the lands of Ica.

According to the Subtanjallinos, there was no war because before it began, the Inca negotiated with the Ica warriors their union to the empire. As part of the celebrations for the agreement, the Inca spent a week with his army of forty thousand men in the territory of the Tate settlement, where he met a beautiful woman. The Inca was captivated by her beauty, but the woman did not reciprocate his feelings because she loved a man from her region. Resigned, the Inca decided to start his march back to Cusco but, before retiring, he approached the woman and told her that he would like to satisfy her greatest wish. The woman asked him to bring good water to her people.⁶ The Inca, still in love, promised her that in ten days, her wish would be fulfilled. And that’s how he left with a handful of soldiers, while the rest stayed to open the now called “Cauce de la Achirana” (the Achirana canal), which supplies water to the fields of the Ica valley (see also Oré, 2005).

⁶ In many variations (see Boelens, 2015), this legendary tale of males being asked to bring irrigation water and conquer females’ love can be found in many Andean communities.

As people in Subtanjalla say, in the times of the *gentiles* (the unbaptized indigenous peoples), water was brought so that the people of the *pampas* (desert) could grow their food. In gratitude to the villages where the water came from, the coastal people sent fish and seafood, cotton, beans, and other products that were not common for the Andean villages. According to smallholders of Subtanjalla, at that time, the *agua nueva* was of even better quality than it is now because the people of the Andes knew that the products produced in the coastal valleys would benefit them directly. For this reason, they made an effort to send water in large quantities and with the highest quality; that is, with the right measure of *yocle*.

However, this type of mutualist relationship based on water-based ‘vertical economies’ (Murra, 1972) changed in the days of the haciendas and the circulation of money. The water was still brought from the Andean bodies of water, but nothing was given to the Andean people in return. Instead, with the haciendas, many of the Andean people that were not working for the haciendas located in the highlands were forced to go down to the coastal areas to earn a living for their families. “There was no gratitude anymore. Money changed everything”, said Reina Perez. However, according to the Subtanjallinos, the water was still of good quality at the time of the *haciendas* because the Andean hacendados had agreements with the coastal *hacendados*. Both were interested in maintaining the quality of their livestock and agricultural products, so they were concerned about having good quality water, both in the highlands and coastal valleys.

Nevertheless, since the Peruvian Agrarian Reform promulgated by Velasco Alvarado in 1969, the *agua nueva* that is “sent from the highlands to the coast” no longer has the same quality as it used to have. The decline of irrigation water’s quality has been intensified with the neoliberalization of the agricultural industry, initiated by the government of Alberto Fujimori in the early nineties. According to the Subtanjalla smallholders, this happens because there are almost no farmers left in the Andes who could give strength to the irrigation water that comes from the mountains.

Nowadays, due to impoverishment, violence, rural migration, and urbanization, many Andean families have descended to the coast, leaving their close engagement with agriculture (Matos Mar 1990; Sanchez Aguilar, 2015; Escárzaga et al., 2002). “There is still a connection with the Andes. But now it feels like a weak connection... nowadays, the people from the highlands have abandoned their lands and are already living with us on the coast; they have become coastal people”, said Armando Galindo. The abandonment of the agricultural highlands has had, in the eyes of the smallholders of Subtanjalla, two equally important adverse effects: 1) a shortage in the quantity of physical water (due to the monopolization of the abandoned headwaters by mining companies who have taken these lands to conduct their initial mineral exploration processes) and 2) the deterioration in the quality of irrigation water (due to the absence of highland peasant communities).

From the Subtanjalla’s smallholders perspective, the coastal and Andean villages, although geographically distant, are connected within and through *agua nueva* – even though this water linkages are increasingly weakened. This water, born and nurtured in the mountains, fertilizes the coastal farmlands, which reciprocate the Andean people with food and other goods produced in their fertile valleys. It is not, therefore, a linear relationship but a circular one. The water that comes down from the mountains to feed and hydrate the coastal lands and peoples returns in the form of food that nourishes the bodies of Andean people and beings.

Therefore, it can be understood that *agua nueva* is also a physical assemblage, which can be understood as the confluence not only of heterogeneous components but also of multiple places. From the point of view of the Subtanjallinos, *agua nueva* articulates and encapsulates multiple relations between people, practices and the environment in the Andes and the coast. In this case, the latter are articulated not through dispute (though Ica’s coast-highland water transfers are permeated by disputes among State, agribusiness and campesino actor groups, see e.g.,

Hoogesteger and Verzijl, 2015; Oré, 2005; Urteaga, 2010), but through alliances. The *agua nueva* is produced by the alliance of the Andean and coastal campesino populations while, at the same time, it creates and maintains this mutualist relationship both physically as well as metaphysically.

For Subtanjallinos, the *agua nueva* is a territorial assemblage that links, inhabits and can travel through multiple physical and metaphysical realms. Articulations are generated between heterogeneous beings such as water, land, rivers, lagoons and lakes, humans, plants, animals, etc., without there being a clear hierarchy or marked division between them. Like water, relationships flow through blurred boundaries. Like water, the circularity of relationships is not simply spatial but also temporal. The flow of water not only serves as a bridge between the Andes and the coast but also between “the times of before” and “the times of now.” Those survivals or “almost lost customs that we still have from the time before,” as Lucho Escate explains, constantly appear in Subtanjalla in the form of ‘existential ritornellos’ (Guattari, 1990: 39), traditional practices or pieces of modes of existence that do not appear to belong to the current times but that the smallholders do nourish and cultivate. And this nourishing and caring is mutual, as Boelens (2014: 241) elaborates, since these strongly signifying “splinters of local territorial-cosmological complexity” constitute dynamically evolving, driving forces of current thinking, feeling and acting.

In this sense *agua nueva* also manifests as a temporal assemblage in which the “times of before” are still living in “the times of now”. As the old people of Subtanjalla say, there are some almost lost customs that still survive in the *yocle* and in the *agua nueva*. These are old time customs that provide small farmers with alternatives to the dominant contemporary practices. Instead of using artificial fertilizers to give more strength to the soil, for example, small farmers can modulate the forces of *agua nueva* and *yocle* to nourish their land. Thus, *agua nueva*, understood as a temporary assemblage, serves the Subtanjallinos as a gateway for the reterritorialization of ancestral practices and knowledge. The pragmatic understanding of this temporal-spatial relationship continues to be central for the proliferation of their practices and knowledges. It allows them to speculate on alternative, traditional ways of relating to what they conceive as their water and lands, through agricultural practices of “the time of before” that still exist, while dynamically building these into the creation of “the time of now”.

6. Finding openings and new understandings through water assemblages

From the ontological opening provided by the stories, experiences and understandings of Subtanjalla’s smallholders we have analyzed how *agua nueva* and *yocle* express as water assemblages. As is the case in other peasant and indigenous communities in the Andean Region, in Subtanjalla these water assemblages unify and create territorial relations between people, culture, practices and the environment at different spatial scales as well as between the ‘times of before’ and the ‘times of now’.

Through *agua nueva*, smallholders of Subtanjalla reconnect with their local coastal environment, their agricultural practices, and each other, as well as with those of the Andes where *agua nueva* originates. Therefore, *agua nueva* creates openings that give meaning, value and embedding to the practices and relations of ‘now’. The set of practices-of-before needs the people who live in the present times to survive, while the people that inhabit the present times need the practices of before to keep themselves and their lands alive. In this way, *agua nueva*, as an assemblage, enables the smallholders of Subtanjalla to give meaning to key fragments or pieces of traditional modes of existence that are seen as ‘anomalies’ in the eyes of the modern world.

Agua nueva connects past and present times in a sort of past-that-has-not-yet-passed-and-never-will, enabling smallholders to value, express and sustain their own practices. Therefore, when the *agua nueva* arrives at the chacras of the smallholders of Subtanjalla, it catalyzes the

establishment of hydrosocial territorial relations. It binds their environment to that of faraway places as well as to the people and practices that sustain(ed) those environments. Such material-ritual and hydro-territorial flow imaginaries, combine “hydrological, social, biophysical and cosmological representations, [that] express powerful notions of origin and identity [...], scattered pieces of this hydrosocial puzzle dynamically refer back to ancient hydrocosmological cycle perspectives” (Boelens, 2014: 243). As a result, there are no dichotomic divisions between nature and culture, or past and present, anymore. What we have is a motley composition (Rivera Cusicanqui, 2010; Zaveleta Mercado, 2008), an assemblage that among Subtanjalla smallholders finds its expression in ‘*agua nueva*’.

Water (here, *agua nueva*) is not just a mere multivocal component of a disputed physical territory, it cannot be described as just a single materiality with many different meanings, part of a material territory that generates disputes among different viewpoints. For smallholders, water is, in itself, a coalesced equivocal territory: a unified materiality instituted by the assemblage of multiple knowledges and practices that connects different ways of existence, past and present, as well as dynamic territorial relations. When dealing with an equivocal territory, as the smallholders do, we are not dealing with a plurality of views of a single water but a single view of different waters. And this multiple and indiscernible composition that transits and inhabits multiple physical and metaphysical territories is what we call here: a water assemblage.

These assemblages powerfully create openings, possibilities, relations and meanings that do not have room for expression in modernist practices and worldviews. In practice, they inform and shape identities, practices, collective action and the relations people (in this case smallholders) have with each other, other actors and the environment. These creatively interact with, accommodate or exist alongside other, sometimes modern ontologies of water and related hydrosocial relations and territories.

These insights have important consequences for our understanding of water, hydrosocial relations and territories. It opens up an understanding of water as not just another component or separate element that stands on its own. When conceived as an assemblage, water becomes a rich multiplicity that is neither a part nor the whole. It becomes a relational entity that is relation, subject and an object at the same time. Water is formed through its relations but is at the same time also the carrier and weaver of these same relations that conform as an assemblage. These assemblages are intrinsically hydrosocial in nature as they tie water and the environment with the different dimensions of the social realm (culture, history, institutions, practices, etc.), at the same time they are intrinsically territorial as these tie the different hydrosocial elements spatially and normatively to each other. Finally, assemblages tie time by interweaving the past with the present and the present to the past through relations that are anchored in histories, stories and practices of the past and present (see Fig. 2).

These notions open up new ontological fields of inquiry for exploring the different folds and dimensions that hydrosocial territories (in their plurality) have if we depart from water assemblages. It also invites for an exploration of the implications this has for our understanding of myriad, often very local and unique, water assemblages and how these link to identities, practices, collective action, institutions and water governance arrangements in ontological fields of multiplicity.

CRedit authorship contribution statement

Luis Reyes Escate: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft. **Jaime Hoogesteger:** Formal analysis, Writing – review & editing. **Rutgerd Boelens:** Conceptualization, Methodology, Formal analysis, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial

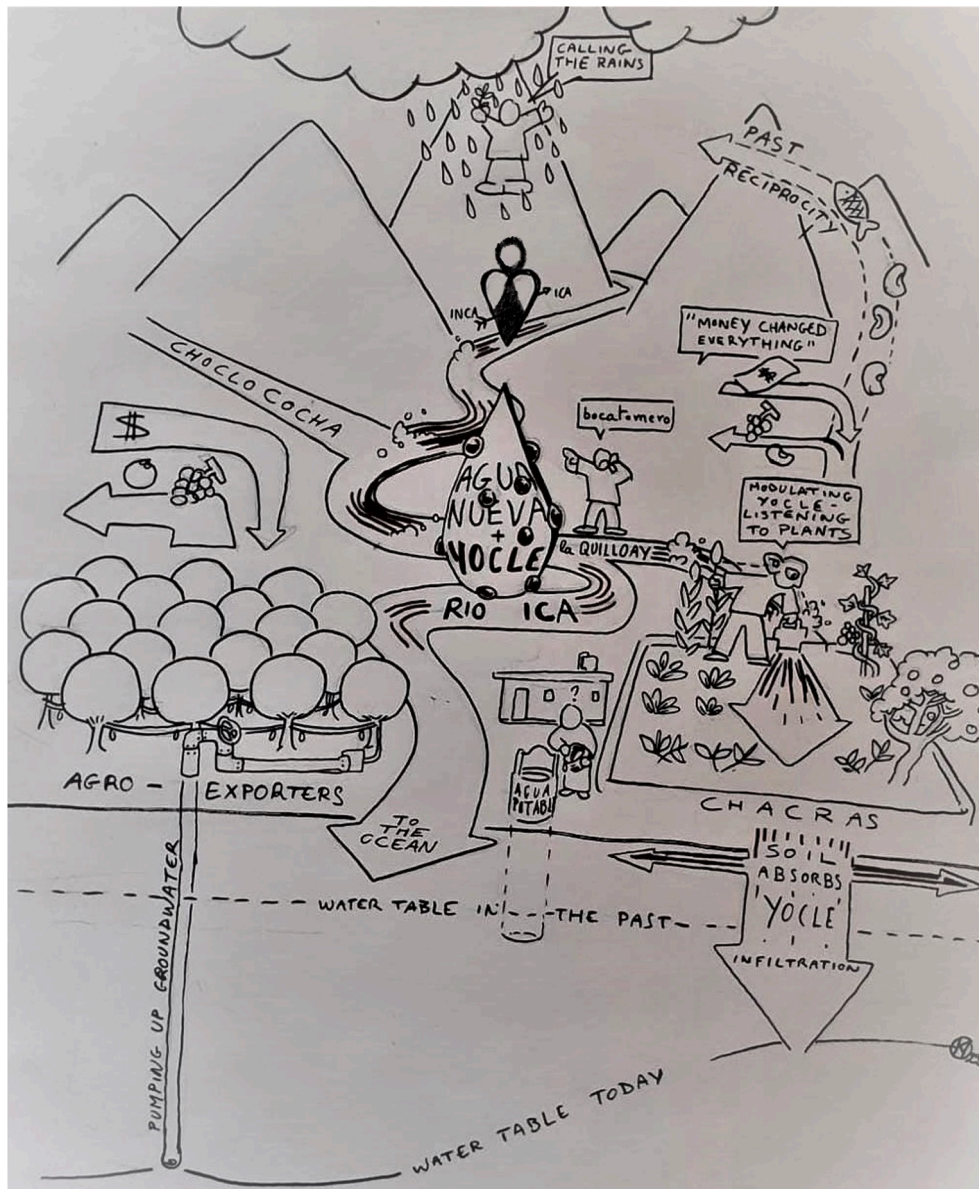


Fig. 2. Artists impression of the assemblages that compose agua nueva and yocle in a specific hydrosocial territory (drawn by Maarten Loopmans).

interests or personal relationships that could have appeared to influence the work reported in this paper.

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