Indigenous languages as commons for environmental governance

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ABSTRACT

This essay explores the idea of indigenous languages as commons for environmental governance in the face of today's mass extinction of species and languages at a global scale. While such idea has been suggested before by a few works as part of the discussion about knowledge commons and cultural commons, it has never been developed so far by linking the role of languages as semiotic codes for knowledge transmission and communication to their role as governance mechanisms through which speech communities manage their common-pool resources while protecting their territories and biodiversity. The latter role has been underplayed by the traditional sociolinguistic view of languages as markers of identity, which has become the dominant narrative in multicultural societies and remains to be on the basis of identity politics in Latin American states. Based on the views of language and its roles from the perspective of indigenous activists working on language revitalization in Ecuador, this essay shows how conflicting ideas about language are at stake when it comes to revitalization. Beyond linguistic ideologies of revitalization, I seek to demonstrate that indigenous language activism is a matter of political ontology rather than a matter of cultural difference and worldviews because it helps communities to construct their own worlds of living. To such extent, any language policy concerning language revitalization on the side of the state, international organizations and academia requires a paradigm shift.

Introduction

Nearly half of the seven thousand languages spoken today will be extinct by the end of the 21st century (Bromham et al., 2022). This statement has been repeated over the last twenty-five years with more or less pessimistic estimates and is being confirmed with the demise of tens of languages every year all over the world. A parallel, equally dramatic extinction threatens plant and animal species on the planet as part of what has been called the Holocene extinction or the sixth mass extinction. That human activities are the driving force of both extinctions seems to be unquestioned by now, especially since the beginning of the Great Acceleration in the mid-20th century. The matching of both extinctions behind the same driving force has led linguists, anthropologists, biologists and ecologists to admit a close link between glottodiversity and biodiversity.

Over the years, scientists have shown that biodiversity is not equally distributed around the globe but concentrates in specific areas, most of them in the tropics. Known as biodiversity hotspots since Myers (1988), these areas are not only home to nearly 60% of the world's plant and animal species but also those which show the highest rates of loss. Revealing of the intricate link between linguistic diversity and biological diversity is the fact that nearly half of the languages spoken today are found precisely in the thirty-five diversity hotspots identified around the globe (Gorenflo et al., 2012). Even if efforts to measure the correlation between both diversities continue, the link is evidently not random but essential. Recent studies show that cultural diversity – and linguistic diversity as a major part of it – is the outcome of evolutionary and biogeographical processes, including geographic isolation, environmental heterogeneity, and long-term human-ecosystem interactions (Mateus-Aguilar et al., 2025).

Speakers of indigenous languages count only 6.2% of the global population. Still, their lands cover an area of approximately 38 million km2, which is equivalent to a quarter of the Earth's surface (Rodrigues Barreto et al., 2025). About 20% of indigenous lands are part of protected areas, "encompassing at least 40% of the global protected area, with the proportion of Indigenous land in protected areas significantly higher than the proportion of other lands that are protected" (Garnett et al., 2018, p. 370). These numbers are robust evidence that traditional cultural practices of indigenous peoples have contributed in one way or another to the conservation of the habitats of thousands of plant and animal species over millennia. At the same time, it shows that biodiversity protection requires that indigenous lands be protected too through effective policies, and indigenous peoples' rights over their lands be guaranteed through legal recognition.

Although the correlation between biological diversity and linguistic diversity is supported by an ever increasing number of case studies from different parts of the world, it is not at all clear to policymakers. The Kunming Montreal Global Biodiversity Framework, an international instrument of environmental policy prepared on the occasion of the 15th Conference of Parties to the UN Convention on Biological Diversity held in Montreal in December 2022, for instance, is clear about indigenous peoples as major stakeholders in environmental governance and the need to protect their traditional lands, knowledge, and practices. However, no mention is made of how indigenous languages may contribute to the environmental stewardship of indigenous lands. Further steps in that direction were taken by the Global Action Plan of the International Decade of Indigenous Languages (2021). One of the outputs of the plan is the creation of an enabling environment for indigenous languages, "thereby contributing to biodiversity conservation, climate change adaptation and mitigation, ecosystems management, land restoration, improving the marine and coastal environment, reducing natural hazards, preventing pollution, and managing water resources" (UNESCO, 2021, p. 16). Nevertheless, the Action Plan is not specific about the mechanisms through which languages enable the stewardship of indigenous territories. Guidelines are missing which may help to develop policies that coherently promote biological and linguistic conservation at national and local levels. When translated to national policy frameworks, the conservation of linguistic diversity in the form of language revitalization usually misses the biocultural link[1]. This holds especially in contexts in which indigenous languages are valued only

[1] Several critiques of "language revitalization" have been put forward (see, for example, Costa 2024; Lane, 2023). At the same time, the term of "language reclamation" seems to be gaining momentum as "it suggests a process of

as markers of identity and makers of cultural difference, as is the case in multicultural states. In such states, languages are protected as part of the society's cultural heritage rather than as commons of indigenous peoples used in managing their common-pool resources and biodiversity.

My argument is that a view of languages as commons beyond the traditional state politics of identity and heritage may help to gain a deeper insight into the role of languages in environmental governance. Such alternative view requires a different approach to the nature of language, which surpasses the framework of traditional language revitalization. In the second section of this essay, I discuss the ideas presented so far in favor of considering language as commons within the theoretical framework of knowledge commons and cultural commons, and how such ideas need to be revised and made more precise. I show that language by its own nature is Janus-faced and that any consideration of it as commons must include not only cultural practices but also embrace a wider view of language as a multimodal system of verbal and nonverbal signs that adapts in complex ways to socionatural life. In the third section, I describe the role language plays in cultural practices oriented to environmental governance. Through three experiences of language activism in Ecuador, I show that revitalizing languages is not only about promoting ethnic identity but mainly about acting upon the world. In the fourth part of this essay, I maintain that this pragmatist view of language in revitalization efforts points to a different linguistic nature and requires of us to go from language ideologies to language ontologies, with profound implications for the way of thinking and doing language policy in Latin America and other parts of the world. The closing section deals with the major elements of any policymaking that seeks to promote languages as commons for environmental governance.

Language all the way: data, information, knowledge, practices

Language is ubiquitous in social life. It is perhaps this nature what makes language difficult to grasp as both a particular type of commons and an object of policymaking. Indeed, language underlies most, if not all, types of what is known as knowledge commons (Hess & Ostrom, 2007) and cultural commons (Bertacchini et al., 2012). However, the intangible view of language as a product of the mind continues to inform a mentalist view of language in the social and human sciences, which detaches it from linguistic practices. In the following, I analyze language as commons from the framework provided by knowledge commons and cultural commons, with a view to identifying several shortcomings in both theoretical frameworks as well as nuances of meaning that need to be included in the concept of "language as commons".

With a few exceptions (see, for example, Nagarajan, 2017; Schaden, 2024), there are no works that focus specifically on languages as commons, let alone indigenous languages as commons for environmental governance. While several authors hold approaches that might be relevant to considering languages as commons, none of them elaborates on what to be commons

reclaiming knowledge about language as well as remaking a language, acknowledging that such projects do not bring language back from the dead so much as produce something new in the process" (Pennycook, 2024, p. 160). Here I stick to the use of "language revitalization" because of its widespread usage and its more generic character. Still, I fully endorse the critiques made to the concept and the practices associated with it, which is precisely the focus of this essay.

means for a language and what the implications thereof are. To Nagarajan, language matters because the very idea of "commons" is language-specific and not universal, as it has been established discursively from the use of the corresponding English word. In his opinion, each language codifies the views of commons proper of each society as well as of the culture(s) and religion(s) associated with it. These views may or may not coincide cross-linguistically, but they determine the relation of commons to their historical and environmental contexts. Schaden is more specific about the nature of language as commons. He states that "languages are basically huge collections of public goods, and their usefulness derives from the fact that they are public goods" (2024, p. 322). His view is that "language units" themselves – phonemes and constructions to be specific – are public goods, and to that extent they are, at least in principle, non-subtractable, i.e., the use of a phoneme or construction by one speaker does not prevent other speakers from using it. Still, he shows convincingly that in certain circumstances, some language units may be subtractable and stop being public goods to become common-pool resources, the use of which is driven by opposing interests from speakers (less articulatory effort) and hearers (less interpretive effort). While I fully endorse both proposals – in particular, I consider that Schaden offers a promising analysis of language change – neither does exhaust by far the potential of language as commons, in particular its potential as commons for environmental governance. Both views fall short of explaining the nature of language as commons: Nagarajan reduces this nature to discourse – which is relevant albeit insufficient – while Schaden makes a similar reduction by viewing language as a sign system modeled according to a signaling game.

The idea of languages as commons is based on three basic assumptions: a) their community-shared nature; b) the collective action behind their use; and c) their intangible nature. Several remarks may be made on each assumption. First, it is not clear whether the concept of "community" in language commons is equivalent to the same concept in natural-resource commons, knowledge commons, or even cultural commons. It is well known since Sapir (1921) that language and culture do not match neatly. For example, the same ecological knowledge may be shared by members from different speech communities just like one speech community may be home to distinct or even dissimilar forms of ecological knowledge, possibly stemming from different cultures. Second, language is certainly a collective action, but it remains unclear if such action is necessarily collaborative. As shown by Schaden (2024), the cooperative nature of conversation is always plagued by the tension between speaker's and hearer's proclivities to minimum effort in either articulation or interpretation. This is not exceptional since uncooperativeness holds likewise in the violation of Grice's maxims. Third, the intangibility of languages as commons entails a mentalist interpretation of language, departing in many senses from the materialist interpretation given by indigenous language activists. Their interpretation confirms the claim that "intangible knowledge resources often are embodied in tangible product forms" (Frischmann et al., 2014, p. 17). A languages-as-commons approach thus requires a different view of language in which different types of semiotic codes are articulated with places, people, and objects connected through language, thereby incorporating the world (the referent) which was detached from the sign in the Saussurean model.

While community sharing and collective action are typical of natural-resources commons, intangibility was first introduced as a characteristic of some type of commons which came to be known as "knowledge commons" (Hess & Ostrom, 2007). In the beginning, knowledge commons

were understood almost exclusively as information commons since they were closely associated with dilemmas of the early digital age, such as the production and sharing of digital information on the Internet. Hess & Ostrom (2007) admit that knowledge can be a difficult thing to grasp given its multiple forms. They consider knowledge as "all intelligible ideas, information, and data in whatever form in which it is expressed or obtained" (Hess & Ostrom, 2007, p. 7). Moreover, they assume a knowledge hierarchy on the division proposed in the framework of information science by Machlup (1983), "with data being raw bits of information, information being organized data in context, and knowledge being the assimilation of the information and understanding of how to use it" (Hess & Ostrom, 2007, p. 8). Language is not included in this hierarchy, neither implicitly nor explicitly, although, from a semiotic perspective, language cross-cuts all the three levels and makes up not only the foundation bricks of the knowledge building but also the agglutinating element that keeps its parts together and connects to social action and practices.

An explicit inclusion of language as commons comes from the proponents of cultural commons. This type of commons refers broadly to "cultures shared by a community" (Bertacchini et al., 2024, p. 2). The cultural commons framework elaborates on the collective nature of culture as a shared set of variegated elements – symbols, techniques, rites, languages, etc. While its proponents insist on the differences of cultural commons from traditional anthropological definitions of "culture", the idea of cultural commons owes to anthropology several of its assumptions, such as the nature of cultural commons as social expressions and their inextricable link to identity. Two major contributions from the theory of cultural commons add value to the view of languages as commons, as I seek to develop here. One is the inclusion of both tangible and intangible forms of culture that can be shared. This is a step forward compared to the idea of knowledge commons, which develops at an almost exclusively discursive level. In this respect, the inclusion of tangible and intangible expressions of culture is key to approaching social action and cultural practices in a more comprehensive way as part of commons. The second contribution of cultural commons theory relevant to my argument is of paramount importance to the purpose of environmental governance. Bertacchini and colleagues insist that, because people's lives are entangled with their local geographical context on the basis of the availability and use of natural resources, "cultures represent the stock of knowledge and practices developed by communities to adapt to the environment and manage natural resources" (Bertacchini et al., 2012: p. 9). As it becomes clear from this statement, knowledge cannot be detached from practices. Thus, one cannot speak of knowledge commons as independent of the practices of use and management of those commons. This means that language as commons may be shared not only as a sign system but also through the ways in which such system is deployed to create meaning and sense in context, particularly to the extent it serves purposes outside language, which more often than not are collaborative in nature and require collective action. Accordingly, the social dilemmas of cultural commons – and one may say of linguistic commons too – are not only those shared with knowledge commons, such as the free-riding problem (benefiting from commons without contributing to its maintenance) or the uncertainty in intergenerational transmission. One major dilemma for cultural commons has to do with the negative effects environmental degradation has on cultural resources themselves, including languages, which usually entails "the loss of access to the natural and tangible resources upon which the traditional culture is based" (Bertacchini et al., 2012, p. 9).

Thus, one moves from the epistemic and cultural levels to those of ecology, policymaking, and politics.

On the possibility of language as commons

To be more precise about what means to be commons for a language, I consider fundamental to follow a distinction made explicit by several analysts who claim that commons may be understood as both a resource or resource system and a governance regime. I find such distinction useful because it mirrors a similar one between a systemic and a functional view of language. Only a language viewed as a self-contained system of signs can become a resource to be managed (used) as if it were an object. In the same vein, only language viewed as serving specific purposes in social life can become a governance mechanism. Therefore, any language may be considered commons because: 1) it is a sign system shared by a speech community, even if the speech community in question uses other languages at the same time (multilingualism); 2) it is one of a number of mechanisms available to a speech community for the management of other types of commons including natural resources, ecological knowledge and a range of different social practices.

Facing a scenario of an ever-decreasing linguistic diversity at global scale, the question is which approach to language as commons language revitalization should follow. To answer this question properly, others must be answered first: what is language revitalization for? Shall languages be revitalized to promote identity and cultural heritage of ethnic groups? Or shall languages be revitalized to promote governance mechanisms? My claim is that both purposes are not necessarily contradictory, but only the second one may counter the loss of biological diversity and the associated phenomena of environmental crisis and climate change.

As commons shared by a speech community, each human language should be preserved for its own sake, i.e., for the sake of preserving it as a unique sign system. In fact, preserving languages for the sake of languages has been the dominant approach to language revitalization over the last twenty-five years. The advocates of this approach insist that languages are valuable in and for themselves and thus no other reason needs to be called for beyond the preservation of linguistic diversity. At the same time, critics claim that reducing efforts to documenting and describing languages without mobilizing the outcomes to increase language vitality usually results in archives with no use for speech communities and the reification of languages as pieces of a museum (see, for example, Perley, 2012). Needless to say that this approach to revitalization eventually ends up by resorting to identity and heritage as subsidiary reasons in one way or another. Thus, UNESCO calls for revitalizing indigenous language as part of the world's heritage while states seek to protect them as part of the nation's heritage. In either case, the speakers of indigenous languages are not aware of what it means to be heritage for a language and what implications it has for linguistic policymaking. It may also be claimed, nonetheless, that revitalizing a language for reasons of identity may have profound implications for the political positioning of its speech community within the mainstream society, especially in multicultural states. Indeed, politically robust indigenous organization may help to protect traditional lands, preserve biological diversity, and fight against climate change.

While the approach outlined above is still the rule, the last years have witnessed the rise of an alternative approach to revitalization in which indigenous communities seek to preserve their languages because they are interested in using them for a number of reasons beyond identity and heritage, thus escaping the multicultural framework of identity politics imposed by international organizations and nation-states. In the view of grassroots language activism, among the reasons to revitalize indigenous languages are the decisive role played by languages in things like transmission of ecological knowledge, storytelling about landscape and livelihood, negotiation of sustainable land and water management, support to local health care systems, the promotion of food sovereignty, the effective deliverance of traditional justice, conflict resolution in multilingual settings, to name but a few. These new efforts of community-based revitalization are led by local language activists, bilingual educators, artists, and grassroots indigenous organizations, with or without support of the state, universities, or research institutes. Still, it is not uncommon to find within one community or organization diverging views about the role played by languages, with some leaders of organizations advocating for a traditional approach to revitalization based on identity and heritage and language activists advocating for a new approach based on the roles played by languages in sustainable land management, land rights protection, the struggle for social and environmental justice and the like.

In the following section, I present three cases of indigenous language revitalization in Ecuador to illustrate the approach and scope of grassroots language activism in which the role of languages emerges in all its potential as commons for environmental governance at local, regional, and national levels.

Case 1: land rights protection and resource management through language

The Siekopai nation is present in Ecuador and Peru. In Ecuador, Siekopai count a population of 723 people who live in seven communities along the shores of the Aguarico, Shushufindi, and Lagartococha rivers in the Amazonian province of Sucumbíos. Historically, their lands covered a vast area along the courses of Putumayo, Aguarico, and Napo across the northwestern Amazon astride the territories of present Ecuador and Peru. After hundreds of years of territorial dispossession by Spanish conquerors and Creole colonizers, the size of their ancestral territory has decreased dramatically to scarcely 410 km2. Despite all the encroachment suffered from the mainstream society, especially in the last fifty years, the Siekopai continue to speak their own language (Paikoka). Still, rapidly increasing levels of bilingualism have been reported among the younger generations, with cases of children under 10 being Spanish monolingual as a result of media influence and formal schooling. Siekopai education belongs to the Bilingual Intercultural Education System, but most of the curriculum does not include Siekopai cultural contents, and a large number of teachers are Spanish monolingual. At the same time, one of the biggest problems risking the nation's survival is the presence of an ever-increasing number of foreign and domestic invaders who occupy Siekopai traditional land, too often with the state doing nothing about it.

Aware of their survival being at risk, Siekopai have taken action on different fronts with a view to strengthening their sociopolitical position within Ecuador's plurinational and intercultural state: land claims, forest conservation, environmental awareness, reintroduction of traditional subsistence technologies, food sovereignty, and education according to their own ethnic standards.

None of these undertakings addresses language revitalization explicitly. However, a closer look shows that each and every action does include language as a key component. Surely, language may play a major role in certain actions while only a subsidiary one in others, but it is overall present as a catalyst of efforts and initiatives at a local, regional, and national levels.

After the 1941 war with Peru, the Ecuadorian state dispossessed Siekopai of a large part of their traditional lands on the international border to make them a security zone. Once the Peace Treaty was signed with Peru in 1995, the security zone was dissolved. Unfortunately, it began to be occupied, without Siekopai consent, by colonists and members of other indigenous nations. Since then, Siekopai have sought by several means to legally recover their lands not only because they consider them part of their sacred geography, but also because that might be the only way to prevent oil extraction in the area, with all the well-known environmental problems associated with it[2]. In 2017, an administrative request was made to the Ministry of Environment, Water, and Ecological Transition for the State to respect and enforce respect to, the right of the Siekopai nation to maintain ancestral property in Pë'këya, the proper name of Siekopai traditional lands. As the request was not attended to, the Siekopai nation filed a protection lawsuit to demand the fulfillment of intercultural proceedings by the State. After several complaints, some progress was made with a hearing in situ in May 2023. Finally, "on the 24th of November 2023, a ruling was issued by the Provincial Court of Sucumbíos recognizing the Siekopai cosmogony as the basis for their right to claim their traditional lands, acknowledging the damage and suffering caused by state actions, and ordering the reparation of breached rights" (Piaguaje, 2024, p. 79, my translation). The ruling still awaits full execution. Nevertheless, the Siekopai made a strategic move by basing their demands on historical linguistic evidence. They documented oral tradition among elders who still remembered stories associated with Pë'këya and the names of places and rivers concerning their former settlements. They looked up for the older names of rivers on ancient maps prepared by colonial missionaries and cartographers. And they contacted anthropologists and linguists who had worked with them in the past to get hold of old manuscripts archived in Europe and the United States, in which names of people, places, and rivers of their history were mentioned. All the information collected in the process did not serve exclusively the purpose of the lawsuit. It is still being used by community leaders and teachers of intercultural bilingual education to rewrite Siekopai history. They recognize the power of names to evoke narratives of adaptation but also of conviviality with nonhumans, a central aspect in their survival practices in the rainforest.

It is worth noting that the initiative did not emerge from a language revitalization project. It was a process of grassroots language activism that connected all the seven communities and included people of all ages. The stakeholders were neither the State nor the academia but the Siekopai communities themselves. Most importantly, language was not "revitalized" for the sake of language. Language was shown to be entangled with different practices related to storytelling, landscape naming, and human-nonhuman communication as a key to sustainable resource management. Old names activated collective memory and triggered narratives of possession and dispossession. Language made a decisive contribution to political struggle for land claims and to enacting narratives of care and habitation of once-dispossessed lands in which the focus is not on

[2] Siekopai, Siona, Cofan are among the indigenous nations most affected by oil spills and mismanagement of waste from oil extraction in the Ecuadorian Amazon, especially in the 1970s and 1980s.

"owning" lands but on protecting them from degradation. In the same vein, further initiatives linking environmental awareness and religious life have been developed in which religious language plays a major role as a bridge between the realms of humans and nonphysical beings who control the hunting and fishing resources and whose assistance is required to preserve the equilibrium of the rainforest (Gómez Rendón & Piaguaje, 2023). In all these initiatives, a view of language as commons for environmental government is implicit, although its advocates do not explain it in such terms. To them, language simply acts as an agent itself that evokes and provokes significant changes and actions in the world.

Case 2: promotion of indigenous healthcare practices through language

Ecuadorian Kichwa is a language spoken in the Andean highlands and the Amazon lowlands. In the Amazonian Province of Napo, Kichwa communities are facing the havoc created by legal and illegal open-pit mining in several protected areas, most of them outside their traditional lands. The effects are particularly sensitive in health due to exposition to waste from uncontrolled mining activities on contaminated rivers and depletion of animal resources from deforestation. At the same time, migration to the cities for labor has initiated a steady process of language loss and shift to Spanish among the youngest generations. Still, Napo continues to be a stronghold for Kichwa. The indigenous language is widely used not only at home but also in public places, including bilingual intercultural education schools. And most importantly, the language is present in a number of community-based initiatives concerning sustainable tourism, solidarity economy, and indigenous healthcare.

Over the last few years, several grassroots associations in Napo have launched community-managed projects to collect knowledge, skills, and practices of traditional medicine in a systematic way so that it can be transmitted to younger generations and benefit communities at large. While traditional medicine is usually associated with the use of medicinal plants, it also includes the use of different types of animal species of the rainforest as well as specific verbal practices such as chants and formulaic expressions, aiding in the treatment of various illnesses. To produce a systematic collection of plant and animal species involved in medicinal practices, digital multimedia glossaries have been prepared with the use of free software. Each entry of the glossary includes plenty of information concerning the names of the plant and animal species used, the steps of preparation and treatment, and relevant ethnographic information about food taboos and post-treatment diets. All this information has been collected and registered in Kichwa, accompanied by supplementary visual material. Language plays a key role in indigenous healthcare practices in different ways.

Storytelling plays a major role in indigenous healthcare systems. Interestingly, the strong link between healthcare and storytelling has been recognized in Western medicine only in recent years (cf. Bartel et al., 2024). Storytelling in indigenous healthcare has to do less with illness stories than with a whole range of narratives related to oral tradition by which the cause of illness becomes meaningful to patients in the framework of their worldview. For instance, food taboos associated with a specific illness or condition are usually interpreted by an indigenous patient in the context of stories. These may be etiological or founding myths, but also a narrative describing the connection among different elements of the landscape and their influence on the well-being of

people and other nonhuman beings. In several cases, narratives are often of oneiric origin since they are associated to dreams the patient or someone of his/her relatives had before, during or after the illness. These stories are key to elucidating the etiology of the illness but also to guiding healthcare procedures. Needless to say, Kichwa is the preferred language used in storytelling associated with healthcare, if not the only one. In fact, the prevalence of Kichwa monolingual practices in traditional medicine has been one of the reasons why Western medicine has not managed to fully replace indigenous healthcare systems in the Ecuadorian Amazon.

Several chants and formulaic expressions are also used as part of healing sessions by medicine men and women who are knowledgeable about this language register. While the work of indigenous healers has decreased in some communities, it is still vital in others and continues to be transmitted to younger generations. Their activities usually find strong resistance from Western healthcare professionals who now visit far-away communities more often than in the past. The main reason for their resistance has to do with the presence of religious elements as part of local healthcare practices. Such presence is explained by an indigenous etiology according to which non-physical beings act upon human beings either for health or illness. Religious language is the main channel to communicate with non-physical beings to appease them or let them act upon the healing of a patient. As part of indigenous healthcare practices, a number of rituals are also performed at specific sites such as rivers, waterfalls, caves, or mountains in which the officiant communicates with their guardian spirits by way of chants and prayers in the indigenous language in order to ask for the well-being of both humans and nonhumans. The importance of religious communication as part of healthcare is strongly emphasized by language activists and community leaders as an effective way to face health problems from open-pit mining and deforestation.

These initiatives have met with success from being strongly community-based and having as their main advocates a number of engaged local actors, including community healthcare practitioners, local language activists, and people knowledgeable about medicinal plants and oral tradition. To be sure, language plays a prominent role in indigenous healthcare practices, but it is because of such a role that revitalization is worth being undertaken in the eyes of the speakers. Healthcare-based linguistic practices articulate bodies, objects, utensils, plants, animals, rivers, mountains, and non-physical beings. Through language indigenous people do not only get ideas and feelings across, but they also connect to the land and the spiritual world for well-being. Through language, plants and animals become part of healthcare practices, and these become meaningful in the context of people's narratives. In all, language helps to articulate what Volkart called "technologies of care" (2017) in a damaged world like that of deforested forests and contaminated rivers, which, unfortunately, is becoming the rule in all Amazonian countries.

Case 3: forest diversity management and food sovereignty through language

Waorani were the last indigenous nation to be contacted. Before the early 1950s, they foraged in a vast area along the basins of the Napo and Curaray rivers. From a semi-nomadic existence, they became sedentary after being enclosed in a protection area (the "protectorate") under the auspices of SIL missionaries by the late 1950s. Their present population is roughly 4000 people living in thirty communities in the Amazonian provinces of Napo, Pastaza, and Orellana. In 1990, the Waodani were granted title over 6125 km2 of their traditional lands. Most of their titled lands

overlap with the Yasuni Biosphere Reserve, the largest protected natural area in Ecuador, and is considered one of the most biodiverse areas in the world. While this unique situation provides Waodani with legal means to protect and defend their lands, these are now endangered by illegal timber extraction inside the biosphere reserve and oil extraction in the proximity of Waorani communities located outside the reserve.

Deep changes in Waorani livelihood have taken place over the last sixty years. Younger generations today prefer to work as waged laborers for oil companies and lead their lives outside their communities of origin. Traditional horticulture is not practiced by all family clusters, and the otherwise unknown use of fungicides, insecticides, and fertilizers has been reported in some communities instead of the Waorani ecological knowledge traditionally used to control pests and fertilize the soil. This is crucial because changes in horticultural practices have medium and long-term effects on forest conservation, as shown by differences in plant diversity and richness between managed and unmanaged forest plots (Zurita-Benavides et al., 2016). At the same time, Waorani are experiencing a rapid language shift to Spanish and abandoning a large number of practices associated with the indigenous language (War tededo). While migration to the cities is one determining factor, Western education has played a key role as well. Because curriculum and teaching are mostly based on Spanish, even in bilingual intercultural education centers, schooling has become a powerful agent of acculturation and language shift. Still, Waorani ethnobotanical knowledge and forest management practices are present in most communities, especially those less accessible by roads in the provinces of Pastaza and Orellana.

In a context of rapid acculturation and environmental degradation of the rainforest, some Waorani communities on the outskirts of the Yasuni Biosphere Reserve have taken action to reintroduce several traditional practices concerning the management of forest plots and diversification of food staples for consumption as an alternative to market crops that are gradually replacing their traditional produce, given the monetization of Waorani economy through waged labor. In the most acculturated communities, the presence of linguistically coded ethnobotanical knowledge is only partial among younger generations and virtually absent among the youngest. It is worth noticing that Waorani communities outside the ethnic core area of the Yasuni Biosphere Reserve are home to larger numbers of Kichwa residents than is the case in more traditional communities. The reason for these numbers is that Kichwa are the only non-Waorani people with whom Waorani nowadays intermarry, which may be explained by a common history of contact that dates back at least to the early 1900s (cf. Reeve, 2022).

A key point of these cultural revitalization efforts has been the recovery and use of old naming practices of plant species. While Waorani ethnobotanical knowledge began to be documented only in the late 1990s (cf. Mondragon & Smith, 1997; Cerón & Montalvo, 1998), it is well known by now that one of its main characteristics is that it prioritizes ecological relations over taxonomic features, which enables to map out a wide network of species relationships throughout the rainforest (Rival, 2009). Notice that Waorani and Kichwa ethnobiological classification systems, although coded differently given the distinct phylogenetic origin of their respective languages, seem not to be at odds in the first place (Rival 2009). Nevertheless, some Kichwa influence on the Waorani ethnobotanical classification system is expected given the decade-long contact between both languages, the increasing rates of Kichwa-Waorani bilingualism

in communities outside the ethnic core area, and the fact that Amazonian Kichwa groups usually practice slash-and-burn agriculture rather than slash-and-mulch agriculture proper of Waorani (Zurita-Benavides et al., 2016, p. 3). Accordingly, Rival argues that "a thorough understanding of the cognitive and cultural processes at work in the Huaorani plant naming system will require a comprehensive study of the folk biology of both the Huaorani and their agriculturalist neighbors, particularly the Quichuan speakers with whom they now intermarry" (Rival, 2009, 65).

Recovering the Waorani plant nomenclature is only one side of the strategy, however. The other side has to do with recovering the stories involved in horticultural and forest management practices. Storytelling features here as an outstanding language-based mechanism to activate biocultural practices in communities culturally deprived because of an interrupted transmission of knowledge and language. To the end of disseminating the oral tradition related to horticultural and forest management practices, community-based workshops have been carried out with older and younger generations. Therefore, storytelling has been re-enacted as part of the dynamics of ecological knowledge transmission, interrupted in many communities by the temporal and spatial coordinates of formal schooling. The complex web of stories concerning horticultural tradition and forest management includes not only myths, but also family stories that span over up to six generations. Given the richness of narratives concerning livelihood in the rainforest, the time scope of Waorani oral tradition may be useful to study ecological history and trace changes in landscape over long periods of time (Zurita-Benavides et al., 2016).

State-based revitalization policies versus local language activism

The three initiatives described above are instances of local language activism in which state planning is absent. There is a number of differences between such initiatives and those undertaken by state agencies to promote linguistic diversity. Differences have to do with strategic planning (bottom-up / top-down), the type of language outcomes expected (practice-oriented / product-oriented), and the scope of revitalization (multidimensional / unidimensional). Even if planning, outcomes, and scope may vary in each case, there seems to be a contradiction between state-based and community-based projects[3]. State and community actors involved in revitalization efforts are aware of their differences, but discrepancies are not vented in the stage of project design, either because state agencies build revitalization strategies on their own, without participation of community leaders and representatives, or because local language activists design projects without the knowledge of state agencies and external experts. Differences come up during the implementation of projects. In some cases, these are partially redesigned but still kept to bureaucratic frames, for example, without any change in the type of outcomes expected. In other cases, projects stick strictly to planning but usually lack community involvement. In still other cases, projects do not take off due to largely unbridged disagreement.

[3] It is not accurate to trace a clear-cut divide between community-based and state-based revitalization strategies. Several local initiatives have been financially supported by state agencies and to such extent constrained in their scope and outcomes by what the funding agencies expect to be done. Similarly, in the last few years some state agencies have developed a scheme of funding based on broader criteria in which innovative strategies at a local level have found support.

Disagreement partly has to do with the lack of community consensus and non-consulted decision-making on the side of state agencies, concerning, for instance, the use of funds, the timeline of work, or the role played by local language activists, too often downplayed by the participation of external experts designated by the state. The core of disagreement concerns, nonetheless, the scope of revitalization in relation to the types of activities, spaces, and actors involved. Project designers from the state usually view language revitalization as attached to formal schooling, paying no attention to other communicative spaces in which language plays a key role. Local language activists, in turn, are concerned with revitalizing linguistic practices at large, preferably in communicative spaces outside school, not only in the public space of the community but also in natural spaces within their traditional lands. For anthropologists, these spaces are territorially relevant. To the eyes of language activists and communities, nature spaces are real "cultural hotspots", i.e. communicative settings in which human and nonhuman agents are connected via semiotic practices. Here is the first breaking point. Locating language revitalization not only in the sociocultural space of the community but also in the socionatural space of their territory represents a strategic move of indigenous language activism, which seeks to shift the focus to indigenous lands. It also implies a radically different view of what language is and what language revitalization is for. It challenges the official discourse on language diversity, which is based on a multicultural idea of languages as entities marking the ethnic identity of clearly bounded human communities (Gómez Rendón, 2021).

When asked about the reasons for disagreement, state officials usually resort to a narrative which reduces the confrontation between state-based and community-based revitalization strategies to cultural difference: state policymakers operate on a "realistic" scientific basis while local language activists follow the "worldview" proper of their culture. This is the second breaking point. For local language activists, indigenous language revitalization is a matter of world-making and goes beyond "world-viewing". Promoting linguistic practices means acting upon the world such that revitalization becomes one effective way of making a damaged world habitable and livable. Therefore, policymakers and language activists are not talking about the same thing when they refer to language revitalization: each has a different representation of what language is and what language revitalization is for.

Too often, the multicultural shortcut circumvents the problematic nature of language revitalization. In the disagreement between state officials and local language activists, two dissimilar ideologies of language are clearly at stake: on the one hand, language as a sign system with defined boundaries which sustains identity; on the other hand, language as a set of verbal and non-verbal practices which enables human and interspecies communication and entangles linguistic and nonlinguistic elements. Now, once these ideologies materialize in specific practices, they trespass the threshold of mere representation and become language ontologies. As such, language ontologies are not about differing views of language, that is, different ideas about one entity whose nature is previously assumed and is out of question. Language ontologies are about different realities. To the extent that different realities of "language" are involved, social actors develop different practices. State officials and scientific experts (linguists and anthropologists) are concerned with defining the boundaries and structure of sign systems through the production of grammars and dictionaries, perpetuating their transmission through writing, and associating their profiles to the cultures of specific human groups within the national boundaries. Language

activists, in turn, are concerned with articulating linguistic and nonlinguistic elements through specific practices in a number of different settings. In both cases, language ideologies are enacted differently: not only reading and writing standardized versions of indigenous languages at schools or translating curriculum contents from the official language to indigenous languages, but also singing chants to manioc plants, communicating with nonphysical beings in rituals, or creating narratives of health and illness.

Indigenous ideologies of language are enacted as language ontologies through revitalization practices like those described in the previous section, in which the human-nonhuman divide blurs. In them, both human and nonhuman agents partake in world-making as full-fledged political entities. Language revitalization is thus key to positioning nonhumans as subjects of law and claiming their protection under the constitution on the basis of legal status. In this sense, paradoxically, revitalizing languages is not only about languages – or cultures for that matter – it is about politics at large, that is, about which subjects are agents with power to make worlds. As a corollary, one might say that language revitalization is eventually fought and negotiated in the arena of political ontology (Blaser, 2009: 2013) and does not belong in the fairytale world of "languages" and "cultures", as multiculturalism wants us to think. Of course, the questions are whether the ontological gap between language policymaking from the state and revitalization strategies from language activism may be somehow bridged; and most importantly, what is that which must be revitalized and according to which approach. I do not intend to answer these major questions in the remaining of this essay, but only point to a few pathways that could be explored elsewhere.

Conclusion: languages as commons for environmental governance

In the context of plurinationality in Ecuador, language revitalization takes on a clearly political character that has been so far neglected by state officials as much as downplayed by indigenous leaders because of its exclusive association with the concepts of "language" and "culture". The recognition of alternative language ontologies becomes an effective mechanism to make self-determination effective not only in language policymaking but also, given the entanglements made possible by indigenous language ontologies, in other fields of social action directly connected to the realm of nature. It is by virtue of such alternative ontologies that the role of languages as commons for environmental governance may be understood properly. Still, such a role, albeit clear to indigenous language activists, is far from evident to state officials and policymakers. Is it possible to think of a state-based language policymaking based on indigenous language ontologies, such that what is called "language revitalization" may be oriented to environmental governance while promoting biocultural diversity with self-determination? To begin to answer this question, I will briefly discuss in this closing section what I consider two key elements that any language policymaking oriented to the protection of biocultural diversity and the promotion of indigenous self-determination should include.

The first element has already been addressed. It concerns the need for a shift of focus from languages to linguistic practices. This shift was shown clearly in the three cases of grassroots language activism presented in the third section. Notice, however, that focusing on practices calls

for at least two major challenges. The most demanding of them consists of moving "languages" to the background. This move carries along the implicit recognition that languages are present throughout linguistic practices, but neither their role is always conspicuous, nor they are always ends in themselves. A second, not less important challenge requires of us to think in terms of multilingual and multimodal practices. Linguistic practices in a broad sense may and in fact do include, especially in multi-ethnic settings, more than one language. Similarly, linguistic practices are never only "linguistic" because a number of non-verbal codes are always used in any communicative act. In this sense, it is perhaps more accurate to speak of "semiotic practices" based on "total semiotic facts" (Pennycook, 2023).

Recognizing the multilingual and multimodal character of practices leads us smoothly to the second major element to be considered, "community". The concept of "speech community" as developed in sociolinguistics seems to fall short as far as linguistic practices are concerned, precisely because these are multilingual and multimodal. Since a shift from languages to practices is called for, it is wise to find an alternative concept of community that encompasses their complex nature. In the early 1990s, anthropologist Jean Lave and education theorist Etienne Wenger suggested the concept of "community of practice" to account for a group of people engaged in collective learning within a specific domain of interest (Lave & Wenger, 1991, p. 42). Even if they left it as an intuitive notion in the beginning, the concept as developed later by Wenger (1998) fits squarely what "community" may be in indigenous language revitalization. According to Wenger (2015), a community of practice is defined by three elements: the domain of interest, which implies not only a commitment but also a shared competence; the community, meaning not merely a group of people but above all the relationships built by them to learn from each other; and the practice, not simply reduced to interests in common, but including a shared repertoire of resources collected through a long interaction. I find these elements relevant to address the problem of environmental governance through linguistic practices in a broad sense. First, an idea of "community" pivoting on relationships recognizes the dynamics of practices and prevents ethno-linguistic identities from becoming the only criteria for establishing allegiance to a practice[4]. Accordingly, it allows the co-existence of two or more linguistic systems as it is not based on the criterion of "language". This is the case of the bilingual plant naming practice in some Waorani communities in which two languages (Wao tededo and Amazonian Kichwa) are spoken due to intermarriage. Second, the idea of "practice" defined not only as a collection of acts around a common interest, but mainly as social action based on a shared repertoire of resources and a shared competence, points toward the collective character of language as commons and the collective action behind its use. Furthermore, the idea of a "shared repertoire" makes room for a plethora of components of practice which might include verbal and non-verbal codes, physical (bodies, objects) and non-physical (dreams, affects) elements, all of great importance in the process of "commoning" related to environmental governance among indigenous communities.

Language policies that approach language revitalization from semiotic practices and the communities created through them are in a better position to recognize and promote indigenous

[4] In parallel, it is possible to think of an expanded idea of "community" which may include both human and nonhuman agents of all sorts. An initial exploration of such an idea has been discussed elsewhere (Gómez Rendon, fc.) in relation to alternative ontologies of language, for which reason I will not delve into it further.

language activism. However, these new ideas of practice and community should not be taken as separate elements. They need to be articulated through a comprehensive ideology of language on the side of policymakers and planners. A paradigm shift is needed because, according to Pennycook, "[a]s long as Indigenous languages are thought of in terms of non-Indigenous ontologies, there will always be at best misunderstanding, if not appropriation and extractivism" (2024, p. 18). The question is obviously what language ideology fits best this new approach of practice and community in policymaking. It is not expected that policymakers embrace the ideologies of local language activism. What is expected is that they abandon the ideology of languages as bounded systems attached to preconceived identities and stop doing policymaking on that basis.

A promising ideology of languages more attuned to indigenous language ontologies is language assemblages. Defined as entangled groupings of linguistic, semiotic, and material elements, assemblages focus on a relational ontology that views "the world not so much in terms of its separable parts (humans, languages, animals, objects and so on) but rather in terms of their inseparability" (Pennycook, 2024, p. 156). The view of languages as assemblages is behind the three cases of grassroots language activism discussed above: they articulate linguistic and non-linguistic elements, semiotic and material components alike. Given the multifarious settings of language revitalization and the large number of goals it pursues, most of which are outside "language" as such, a more natural approach to language revitalization from policymaking is through "language assemblages". Of course, this language ideology requires, in practice, a good intersectional coordination and interinstitutional cooperation such that, for instance, health, education, justice, environment, and territorial management may be coherently integrated in the same policies. Moreover, coordination and cooperation will need to include indigenous voices throughout all the stages of planning, design, implementation, and evaluation of revitalization programs and projects. This will be the best way to honor so-far marginalized indigenous knowledge and practices in favor of biocultural diversity and learn from them a lesson on governance: that a plurality of views only gets along with a plurality of worlds and self-determination.

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