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**WHAT CAN WE LEARN FROM INDIGENOUS PEOPLES LAW AND  
METHODOLOGY?**

***QUE PODEMOS APRENDER COM O DIREITO INDIGENA E A  
METODOLOGIA?***

**VALENTINA DE GREGORIO**

Honorary Fellow and Research Assistant in Administrative Law at the University of Turin. She was the Migrant Network co-manager at Slow Food International, Italy, and she supported the activities of the Indigenous Terra Madre Network in the same movement.

**GIULIA PAROLA**

Visiting professor, Federal University of the State of Rio de Janeiro, PPGD Master in Law, Brazil

**ARIANNA PORRONE**

Doutoranda em Global Studies. Justice, Rights, Politics pela Universidade de Macerata, Itália e pesquisadora visitante no Grupo de Pesquisa Social Dynamics in Coastal and Marine Areas da Kiel University, Alemanha.

**MARGHERITA PAOLA POTO**

JCLOS, Researcher at the Faculty of Law na The Arctic University of Norway (UiT), da Universidade de Tromsø, na Noruega. Email: [margherita.p.poto@uit.no](mailto:margherita.p.poto@uit.no)

**APOSTOLOS TSIOUVALAS**

Pesquisador assistente do K. G. Jebsen Center for the Law of the Sea, da Universidade de Tromsø (Noruega),



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## ABSTRACT

**Objective:** The paper analyses the deep contributions of Indigenous knowledge on enriching and encouraging change to laws and research and training the Western legal systems to listen to other voices that have been silenced for centuries.

**Methodology:** The argumentation developed in the paper is based on interdisciplinary research (intertwining social and legal reflections on the three principles of inclusion, coexistence, and resilience) and on a novel approach to comparative law, which includes elements of indigenous law and empirical research (e.g. in the part of the Sea Sámi and traditional fishers), and therefore goes beyond the desk-based comparison of Western-based state laws (e.g. in the last section).

**Results:** The paper is divided into four sections: section 1 examines the constituent elements drawn from the training on Indigenous law and methodology: inclusion, coexistence, and resilience. Section 2 refers to the need of inclusion and interaction between different legal orders (state law and Indigenous and traditional peoples' legal orders), focusing on the case study of the Belo Monte Hydroelectric Power Plant in the Xingu Basin, Brazil. Section 3 develops the theme of coexistence analysing the Indigenous legal traditions of the Northern Coastal peoples in the county of Troms (Sea Sámi and traditional fishers), still kept alive and somehow co-existing with the Norwegian system of coastal governance. Section 4 focuses on resilience with a case study on the Arctic and the local and Indigenous peoples' response to the challenges posed by climate change. Finally, the concluding remarks open the floor for a reflection on a new ontology of the relationship between humans and the natural world.

**Contributions:** The study addresses a topic still unfamiliar to the academic world, by adopting a novel approach to comparative law that bridges indigenous and non indigenous views, and by proposing a new understanding of inclusion, coexistence and resilience, that strengthens the mutual relationship between human communities (indigenous and non-indigenous) and natural environment. The three key lessons operate at a level of law and legal systems (Indigenous and non-indigenous), bringing out new insights in the way of approaching the law, in the consolidation of methodologies, and research perspectives that innovatively enhance the interactions between Indigenous and non-Indigenous views.

**Keywords:** Indigenous Law; Indigenous Methodology; Inclusion; Coexistence; Resilience

## RESUMO

**Objetivos:** O artigo analisa como o conhecimento indígena possa contribuir



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profundamente para enriquecer leis e pesquisas, incentivando-os a mudarem suavemente e treinando os sistemas jurídicos ocidentais para ouvir outras vozes que foram silenciadas por muito tempo.

**Metodologia:** A argumentação desenvolvida no artigo baseia-se na investigação interdisciplinar (reflexões sociais e jurídicas interligadas sobre os três princípios da inclusão, coexistência e resiliência) e numa nova abordagem do direito comparado, que inclui elementos do direito indígena e da investigação empírica (p. ex., na parte do Sea Sámi e pescadores tradicionais), e que, por conseguinte, vai além da comparação documental das leis estatais ocidentais (p. ex., na última seção).

**Resultados:** O artigo está dividido em quatro seções: a Seção 1 examina os elementos constituintes retirados do treinamento em leis e metodologia indígenas: inclusão, coexistência e resiliência. A Seção 2 refere-se à necessidade de *inclusão* e interação entre diferentes ordens legais (lei estadual e ordens legais de povos indígenas e tradicionais), com foco no estudo de caso da Usina Hidrelétrica de Belo Monte na Bacia do Xingu, Brasil. A Seção 3 desenvolve o tema da *coexistência* analisando as tradições legais indígenas dos povos da costa norte do condado de Troms (Sea Sámi e pescadores tradicionais), ainda mantidas vivas e de alguma forma coexistindo com o sistema norueguês de governança costeira. A Seção 4 enfoca a *resiliência* com um estudo de caso sobre o Ártico e a resposta dos povos locais e indígenas aos desafios impostos pelas mudanças climáticas. A conclusão abre caminho para uma reflexão sobre uma nova ontologia da relação entre os seres humanos e o mundo natural.

**Contribuições:** O estudo aborda um tema ainda desconhecido para o mundo acadêmico, adotando uma nova abordagem do direito comparado que liga as visões indígenas e não indígenas, e propondo uma nova compreensão da inclusão, coexistência e resiliência, que reforce a relação mútua entre as comunidades humanas (indígenas e não indígenas) e o ambiente natural. As três lições principais operam a um nível de direito e sistemas jurídicos (indígenas e não indígenas), trazendo à tona novas percepções na forma de abordar a lei, na consolidação de metodologias e perspectivas de pesquisa que melhorem de forma inovadora as interações entre visões indígenas e não indígenas.

**Palavras-chave:** Direito Indígena; Metodologia Indígena; Inclusão; Coexistência; Resiliência



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## 1 INTRODUCTION

This article summarises the results from a research project on Indigenous Law and Methodology presented at a workshop funded by the Young CAS Program (Center for Advanced Study at the Norwegian Academy of Science and Letters) in Oslo on July 2-7 2018<sup>1</sup>. The initial inspiration for the project was on the deep contributions of Indigenous knowledge on enriching and encouraging change to laws and research and training the Western legal systems to listen to other voices that have been silenced for centuries.

Indigenous knowledge, observations, cosmologies, and traditions (that, in one expression, we define as “*Indigenous law*”) have drawn criticism for adopting ‘non-scientific’ and ‘non-objective’ methods. The way to respond to these challenges are through rejecting accounts of objectivity that rely on the universalization of models (State-oriented perspectives, colonialist approaches, and asymmetric relations of powers) and endorsing alternative proposals that make room for Indigenous worldviews (by means of the “*Indigenous methodology*”). The Indigenous methodology, therefore, takes due account of Indigenous and local perspectives and integrates them with further relevant existing data on key issues such as human rights protection, procedural and substantive environmental rights, food safety and security, right to free movement of peoples, immigration, and gender. At the heart of the Indigenous methodological approach is a deep and abiding commitment to identifying, articulating, and applying the intellectual resources from Indigenous legal orders to the work of rebuilding Indigenous citizenries and governance.

In other words, the Indigenous methodology brings back the treasure of Indigenous law together with its teachings. In this vein, the article identifies three key lessons learned through adopting an Indigenous methodology that takes into account Indigenous perspectives, traditions, and worldviews. These key lessons connect to the values of coexistence, inclusion, and resilience and culminate a body of

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<sup>1</sup> The authors would like to express their gratitude to Kelly Wu for her excellent work as proofreader.



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knowledge that investigates, scrutinizes, and demonstrates the epistemic reliability, objectivity, and inner values of Indigenous perspectives.

The paper is divided into five sections. Section 1 (Parola and Poto) examines the constituent elements drawn from the training on Indigenous law and methodology: inclusion, coexistence, and resilience. Section 2 (Porrone) refers to the need of *inclusion* and interaction between different legal orders (State law and Indigenous and traditional peoples' legal orders), focusing on the case study of the Belo Monte Hydroelectric Power Plant in the Xingu Basin, Brazil. This section raises the pressing question on equality, in its definition of handling identical situations in the same manner and of handling different situations in different manners. From the methodological viewpoint, this section combines grounded theory and fieldwork and offers concrete suggestions on the equal treatment of tribal communities and Indigenous groups. Thus, demonstrating the possibilities towards a more inclusive society. Section 3 (Tsiouvalas) examines the *coexistence* of diverse legal orders using the case of *Coastal Sámi Marine Tenure*. This section develops the theme on the Indigenous legal traditions of the Northern Coastal peoples in the county of Troms (Sea Sámi and traditional fishers) still kept alive and co-existing with the Norwegian system of coastal governance. Moreover, the section encourages the reflection on past wounds and injustices and on the possibilities to revitalise ancient traditions and knowledge around the Indigenous marine tenure system. Section 4 (De Gregorio) focuses on *resilience* with a case study on the Arctic and the local and Indigenous peoples' response to the challenges posed by climate change. This contribution reflects on the integration of Indigenous knowledge systems and modern science related to food traditions, the ability of its integration on developing a co-evolution of knowledge, and its influence in shaping resilient societies.

Finally, the concluding remarks (Parola and Poto) open the floor for a reflection on a new ontology of the relationship between humans and the natural world.



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## 2 KEY LESSONS DRAWN FROM THE TRAINING ON INDIGENOUS LAW AND METHODOLOGY

The workshop on Indigenous law and methodology helped open up new perspectives on possible blended methodologies that combine legal analysis, anthropology, sociology, social, and gender studies.

Three key lessons were drawn from the interdisciplinary analysis: the value of *inclusion* and openness between humans and non-humans, individuals, collectives, and the natural world; the value of a peaceful *coexistence* of legal orders and perspectives; and the scrutiny of the Indigenous world's ability to be *resilient* towards change.

These interconnected key lessons that emerged are also shared values in the Indigenous world.

Firstly, it is from Indigenous views that we learn the importance of *inclusion*. It is indeed a shared Indigenous value, the idea that human beings are active caretakers of each other and of the planet. The cooperation in the construction, maintenance, and protection of the web of life carries a sense of oneness between individuals, communities, the and natural world (Cajete, 2019). Indigenous cosmologies teach the importance of embracing our deep connection with nature, our ancestors, and all living beings. Such profound interconnection between human beings and nature has reverberations on the legal domain as well, suggesting the idea that official legal orders have to include and be interconnected with norms that defend and protect peoples, communities, and the natural world against the violation of fundamental rights.

Secondly, the Indigenous world teaches the value of coexistence and is placed as a paramount value according to Indigenous ontologies (Larsen & Johnson 2017). As Indigenous societies are inclusive of human and non-human beings (animals, trees, water, fire, wind, earth, and all kinds of spirits), they also accommodate and ensure that Indigenous and non-Indigenous worlds, ontologies, and actors encounter and coexist in a peaceful and lasting relationship. The effects



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on the legal world enable the coexistence of diverse legal systems in an interactive manner and with a relative degree of autonomy. In the same vein, Indigenous legal systems and international and national laws on Indigenous Peoples should aim to coexist in a harmonious manner.

Therefore, *inclusion* and *coexistence* are the golden rules governing the interconnection of different legal orders, whereby these orders learn from each other the value of acceptance, comprehension and exchange, and reconciliation.

The value of *resilience* teaches the third lesson in facing adversity, trauma, tragedy, threats or changes. Resilience can be learned from Indigenous legal orders that have withstood the wave of marginalisation. These legal orders developed around systems of governance that are now exemplary models of mitigation and adaption in challenging times, where both societal and climate changes are threatening humans and non-humans.

The three key lessons operate at a level of law and legal systems (Indigenous and non-indigenous), bringing out new insights in the way of approaching the law, in the consolidation of methodologies, and research perspectives that innovatively enhance the interactions between Indigenous and non-Indigenous views.

Thus, the three key lessons are not only illustrative of new interactions between legal orders and cultures. The lessons also demonstrate a new participatory and inclusive research approach as the way forward to the solitary confinement of screen-based research, that too often becomes self-referential and self-destructive. Participants' observations and interactions between researchers and participants demonstrate the way towards novel approaches in legal research: research team members and communities co-create the research results, become part of the same observation process; and are immersed in the same setting and reality.

In this manner, the observer alters the observed phenomena to the very degree of their participation (the phenomenon is known as "Heisenberg observer effect" (Marshall & Rossman 2006)). Ultimately, researchers are free from the yoke of being self-referential and can rediscover their purpose.



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### 3 INCLUSION

Lessons on the inclusion of Indigenous law within western legal thinking and on the need for states to adapt and welcome new concepts of justice can be drawn from Indigenous and tribal peoples' struggles around the world. These struggles have been developed from the construction of infrastructures, large-scale projects, and concessions for the exploration or exploitation of natural resources in ancestral or traditionally occupied territories (Inter-American Commission of Human Rights, 2010). Often times, Indigenous Peoples and tribal peoples engaged in negotiations are confronted with capitalistic notions and their ethics are restricted to civil and administrative law terms. The rights of Indigenous Peoples and tribal peoples are then only recognised and visible before public authorities under these limitations. This section argues that states should adapt and include new concepts of justice and to come to terms on Indigenous and tribal peoples' cosmologies for three reasons: 1) to guarantee the rights of Indigenous Peoples and tribal peoples to govern themselves within their recognised collective territories; 2) to monitor the impact of public interventions in these areas and to ensure just remedies; and 3) to embrace new forms of thinking, ancient wisdoms, and practices of care beyond monetary thinking, grounded in the strong awareness that humans and nature are two sides of a whole.

*Ribeirinho* is the general term used to appoint a range of denominations of the peasant groups living in the Brazilian Amazon and is a category that identifies as tribal. These sociologically diverse communities have some common features in their strong relationship with the environment and the natural resources.<sup>2</sup> In the Xingu Basin, *ribeirinho* groups are better known as "*beiradeiros*", literally meaning "people living in the waters"<sup>3</sup> or "*Povos das Águas*" (Scherer 2004) as they spend most of

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<sup>2</sup> ILO Convention No. concerning Indigenous and Tribal Peoples in Independent Countries 169; Decreto Legislativo n. 143, 2002. Aprova o texto da Convenção nº 169 da Organização Internacional do Trabalho sobre os povos indígenas e tribais em países independentes and Decreto n. 6040, Institui a Política Nacional de Desenvolvimento Sustentável dos Povos e Comunidades Tradicionais.

<sup>3</sup> Translated from Portuguese by the author.





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their life on the edges of the river. From a sociological viewpoint, the *ribeirinhos* represent a peasantry's fraction, whose livelihood is characterised by the combination of diverse activities, alternating between subsistence farming and the marketplace (Barbosa et al. 2017). Production depends upon a number of variables such as the availability of the workforce, the rate of family integration, and of the development of social units. Consequently, the configuration of each community requires wide plasticity and implies a certain degree of unpredictability in the communities' everyday achievements. This living pattern undoubtedly reproduces capitalistic dynamics without completely depending on them (Barbosa et al. 2017). Deep roots in a complex web of social ties combines kinship and the neighbourhood by virtue of exchange and reciprocity. Yet, these people do not live in isolation. The *ribeirinhos* are rather strongly involved with the city of Altamira. Nowadays, the value given by these people to education is universally shared by the members of these groups. Families are willing to sacrifice the group's unity or are willing to alter ways of life along the river in order to move close to the city to provide younger generations with the access to education. Temporary separations are also necessary for accessing social services and utilities such as hospitals, medical visits or the marketplace. These habits generally entails the choice of a double housing. On the one hand, there are the dwellings of forestry areas usually gathered around twenty to thirty buildings consisting of wooden stilt houses in an area sufficiently close to the river. This is for the purpose of permitting families to easily reach the water during the dry season. On the other hand, households in the urban area are settled at the edges of the city, where flooding occurs periodically in the *Ambé*, *Altamira*, and *Panelas* streams. The proximity to water is crucial in order to grant access to the city through the use of narrow traditional boats.

The social structure of the *ribeirinhos* depend on domestic relations of reciprocity and economic cooperation. Domestic groups do not exclusively include family members. Instead, they extend to other individuals of the same community closely connected to each family *nucleus* for "moral or ritual" reasonings (Barbosa et al. 2017). Hence, cooperation is not based on the neighbourhood assumption, but on



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knots of abstract nature and solidarity.

Since 2015, about 40.000 *ribeirinhos* were displaced by the Brazilian government due to the construction of the Belo Monte Hydroelectric Power Plant (the Former Altamira Complex), the world's third largest dam part of the Programa de Aceleração do Crescimento do Governo Federal (PAC). The *Plano Básico Ambiental* (PBA) (Norte Energia Usina Hidroelétrica de Belo Monte 2016) ruled the displacement procedure, acknowledging that social impacts caused by development projects were often based on western conceptions of territorialisation. Therefore, it was suggested to have an inclusive policy that could consider case-by-case needs beyond a strictly economic evaluation. Nevertheless, the identified forms of remedies were the following: 1) pecuniary compensation; 2) assisted re-allocation (*carta de credito*); and 3) collective urban re-settlement ( *Reassentamentos Urbanos Coletivos* (RUC)).

Pecuniary compensations for tribal peoples amounted to R\$ 38.853<sup>4</sup>, while non-members received R\$ 48.058. This discrepancy demonstrates that the traditional manner of occupying and using land did not have an impact on the valuation process of the possessed territories. The *ribeirinhos* did not receive specific treatments or an adequate compensation for the suffering and moral damages. The amount of money received was not even sufficient to cover the value of the original lands, especially for those who could count on a double housing before eviction.

Assisted re-allocation took place in 2015 in the form of *Reassentamento em Ilha Remanescente* (RIR)<sup>5</sup> and in the new islands born after the beginning of the dams' construction or on the edges of the Xingu River in 2016, raising conflicts among people who have been re-settled and causing troubles for the traditional means of cultivation.

The case of urban resettlement arranged the *ribeirinhos* in RUCs in *Água Azul*, *Casa Nova*, and *Jatobá e São Joaquim* villages near the city of Altamira. Despite the fact of being called "collective", this solution did not re-allocate each

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<sup>4</sup> In compliance with the *Termo de Autorização de Uso Sustentável* (TAUS).

<sup>5</sup> Settlements in portion of Islands that emerged after the dams' construction.



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community altogether. Instead, it broke collective social relations. Dwellings did not comply with the traditional living habits of these peoples (Fernandes da Rosa 2016). Moreover, in these sorts of stretches of small houses, it lacked an integrated public transport system connecting the RUC with the closest inhabited area (Altamira). Therefore, no direct access to social services was ensured.

As a matter of fact, displacement disregarded the dense social nets of *riberinhos*, disarticulating the traditional mechanisms of their territorial administration. The displacement reduced their capacity of acting freely in a territory by delimitating their households. In the case of RUCs, it prevented them from having a contact to the river, a principal source of income and sustenance for family members. This resulted in a shift from an economic model based on agro-extractive activities to an urban and capitalist pattern. Furthermore, it excluded many people from the resettlement process.

Even so, there are hopeful alternatives and improvements in the manner states and corporations interact with Indigenous and tribal peoples and nature are based on the principles of inclusion, respect, transparency, and openness beyond Western norms.

In the case of the *ribeirinhos*, credit can be given to the cosmo-visions of tribal peoples and to respond to the moral damages including the distress of being removed from the river; the grief from the loss of habitats, where the tribal groups used to develop their collective identity; the suffering from the destruction of the environment, towards which these peoples developed a symbiotic relation; the sense of desolation brought by the involuntary break of each family's social ties; and the discomfort of having to accept state's choices and decisions.

### 3 COEXISTENCE

The relationship of local and Indigenous communities to the natural world differs fundamentally from the relationship of nation-states to nature. Nevertheless,



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the basic concept that norms exist and that regulate the relation between human beings and the environment on which they live, is common to both conceptual understandings (Perrin, 2017, p. 23). Rich ethnographic documentation of human uses of seascapes provides tangible examples, where Indigenous and local community-based laws and systems of tenure have extended to the sea and have helped over generations in the use and sustainable management of the marine environment. In examining the efficacy of legal regimes to govern the world's oceans and coastal regions, it has recently become clear that the rationale of ocean governance policies should be reoriented and become receptive to diverse legal orders that are complementary to each other (Koskenniemi, 2006, pp. 491-493; Schiff Berman, 2007, p. 329). Aiming to elaborate on the coexistence of different regimes of ocean governance between Indigenous coastal communities and contemporary legal frameworks, this section summarises the results of fieldwork conducted in Coastal Sámi communities of Kvænangen fjord in Norway during the winter of 2018/2019. The background of this study is presented along with the research tools of the fieldwork and a brief summary of the main findings.

The Coastal Sámi Indigenous people have historically inhabited the coastal fjord areas of northern Norway, with the majority of them living in the geographic area of the current county of Troms and Finnmark. It is estimated that settlements in these areas date back to approximately 10,000 years ago, while the origins of the Sámi people can be traced to an era when the first distinct ethnic groups emerged in the region (Pedersen, 2012, pp. 51-52). For hundreds of years, Norwegians and Coastal Sámi had coexisted harmoniously alongside the migrating mountain Sámi reindeer herders, who mainly used the coasts during the summertime. Traditionally, the Coastal Sámi have relied on subsistence activities such as small-scale fishing and farming (Hansen, 2006, p. 59). Although limited evidence exists about the legal culture of the Coastal Sámi, it has been recorded that several coastal communities of the region regulated the access to resources attached to their territories from time immemorial, based on customary norms and local governance patterns (Bjørklund, 1991, 44). The Sámi have witnessed a long forced assimilation policy for over a



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hundred years, the modernisation and industrialisation of the fisheries sector in the early 20<sup>th</sup> century, and from the 1980s onwards Norway's constant regulatory measures on fisheries. As a result of these events, management of the traditional Coastal Sámi livelihood of fishing in the area of the case study has decreased over a long period, followed by the erosion of local resource management systems (Eythórsson, 2003, pp 149-162). In contrast, a state-centred fisheries framework has been consolidated for the last few decades across the Norwegian coast, ruling in favour of large-scale industries.

For the purposes of an extended project dealing with marine resource management in Coastal Sámi areas, fieldwork was conducted in Kvænangen fjord and in the adjacent coastal communities of Spildra and Burfjord in the winter of 2018.<sup>6</sup> The fieldwork comprised of participant observation in small-scale fishing in Kvænangen; assistance in fish processing and selling at a local market in Burfjord; accommodation in the coastal settlement of Dunvik; and travelling alongside the captain of a cargo ship from Burfjord to the island of Spildra. Participation in these activities demonstrated that remnants of an intracommunal marine tenure system are still used in Kvænangen fjord by the local population. Although all of the project's participants operate within state law and the state's fisheries framework, they still use a customary system of tenure to navigate in the fjord and delimit the individual fishing area for exclusive access to marine resources. According to the project's participants, this form of community-based governance of the marine space has contributed to the sustainable utilisation of the marine environment and its resources for generations. Such a perception of exclusive access to marine resources is incompatible with the state's understanding of access to marine resources, provided in the Marine Resources Act which secures equal access to all Norwegian citizens. Following the state's regulations, local fishermen cannot prevent others from fishing in the fjord.

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<sup>6</sup> An extended discussion of this project was originally presented in Tsiouvalas, A. (2020) 'Mare Nullius or Mare Suum? Using Ethnography to Debate Rights to Marine Resources in Coastal Sámi Communities of Troms' in Bankes, N. et al (eds.) *The Yearbook of Polar Law 11*. Leiden: Brill Nijhoff, pp. 245-272.



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However, in their interactions with each other, they still distribute marine resources in a traditional way and acknowledge the normative value of the local tenure system.

The case study from Kvænangen is an example of conflict between local legal traditions and their official state counterpart. This incompatibility could be an indicator of the divergent way as to how the local community and the Norwegian state conceive marine resource management. In the context of conflicting legal orders, legal pluralism can be a particularly valuable tool. A pluralistic ocean governance framework could harmoniously accommodate, next to state law, legal orders that stem from Indigenous conceptions of the natural world. International soft law instruments such as the *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication* and the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* explicitly call for the acknowledgement of local and Indigenous forms of fisheries and tenure management. In light of these instruments, pluralism should be understood as a constitutive value of contemporary systems of ocean governance and marine resource management policies. While there are notable examples of such developments in national jurisdictions around the globe, Norway has not yet recognized local systems of customary marine tenure or Indigenous rights to saltwater fisheries.

## 4 RESILIENCE: STORIES OF ARCTIC RESILIENCE

### 4.1 EXPERIENCE OF RESILIENCE FROM INDIGENOUS KNOWLEDGE IN THE GLOBAL NORTH

This section is based on the premise that problems such as hunger and food



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insecurity are not only occurring in the global South.<sup>7</sup> Even the Indigenous Peoples of the global North, bordering the Arctic region<sup>8</sup>, are embedded in contexts and situations of structural poverty. As for all Indigenous Peoples in the world, their survival is closely linked to the region in which they reside, retaining its knowledge, upholding traditions, and preserving biodiversity. These elements contribute to the shaping of their own food systems, which also determines their history and identity. However, the challenges that Arctic and Sub-Arctic Indigenous Peoples have been facing over the last decades<sup>9</sup> are directly and invasively affecting their carefully nurtured homes in pristine territories.

Among them, some decide to leave and take refuge in urban settlements, thus leaving huge rural territories in the hands of myopic national and international policies. Others decide to stay, making climate-resilient solutions a reality. The case of the reindeer herders in Norway and Siberia is remarkable.

Sámi and Nenets people are engaged in environmental matters on a daily basis. Temperatures are rising in Finnmark (northern part of Norway) and the Yamal-Nenets Autonomous Region of Russia. The consequent shortening of the winter season is severely threatening the survival of reindeers, altering their nutrient availability and transhumance towards colder areas. The need to safeguard an animal species, which has a high symbolic value in the eyes of Sámi and Nenets people both in terms of economic livelihood and cultural belonging has resulted in the elaboration of concrete measures to adapt to increasingly unpredictable climate circumstance. To this end, local shepherds have coupled their millennial knowledge and care for the environment with the most advanced engineering technology, thus bridging the distance between Indigenous and socio-scientific expertise. From this

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<sup>7</sup> The Food and Agriculture Organization of the United Nations and others, *The State of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition* (FAO 2018) <[www.fao.org/3/I9553EN/i9553en.pdf](http://www.fao.org/3/I9553EN/i9553en.pdf)> accessed 20 August 2019.

<sup>8</sup> Sámi from the northern territories of Norway, Sweden, Finland, and the Kola Peninsula; Nenets from the Siberian Arctic; Aleut People, or “Unangan”, as they use to call themselves, from Aleutian Islands in Alaska; Tungusic Peoples of Siberia; Yakuts from northeastern Siberia; Inuit or Eastern Eskimo in Alaska, Canada and Greenland; and Yupik or Western Eskimo between Siberia and Alaska. These are just some of territories home to the Indigenous populations in the Arctic.

<sup>9</sup> Including overexploitation of nature, oil, and gas extraction projects, commercial fishing activities, and the systematic deforestation of large parts of the Great Northern Forest by the paper industry.



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mixture of know-hows, the IPY EALAT (acronym for “Reindeer Herding in a Changing Climate”) was born (Maynard et al. 2008).

From the early 2000, this research project involves a heterogeneous team of experts -spanning from the National Aeronautics and Space Administration (NASA), the Association of World Reindeer Herders, to anthropologists, philosophers, and geographers – that assess the vulnerability of reindeer herders, and provide them with concrete responses to climate threats. The reliability and predictability of new technologies combined with the ancient Indigenous art of observing natural cycles, have identified factors capable of influencing reindeer pastures (*ealat* in Sámi language), including climate change. This has allowed herders to modify pasture patterns.

It goes without saying that the goal of IPY EALAT is ambitious and appropriate to the trying times Indigenous people are experiencing in their homelands. However, the unique aspect concerns the actors of such an initiative, where Indigenous Peoples are not under study, but rather active actors in making the right decisions.

#### 4.2 STRENGTHENING RESILIENCE: KNOWLEDGE INTEGRATION AND CO-PRODUCTION

The willingness to adapt and respond positively to a quickly occurring transition, the ability to promptly and creatively organize, as well as the flexibility in combining one’s own customs with a science-based methodology, has enabled Indigenous communities to work out innovative methods. As a result, this would allow them to remain on their lands of origin and to become resilient. Resilience stories form part of a universe of independent initiatives that make sure that the cultural, social, and economic needs of Arctic communities are embraced. These experiences become concrete models of activism at the local level, where Indigenous communities’ knowledge is highlighted, prioritized, and corroborated by science and academia.





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Therefore, this section describes a higher level of resilience.

Driven by the necessity of creating a safe space, where to maintain continuity with the oldest living cultures on Earth, projects such as IPY EALAT reframe the way Indigenous landscapes are portrayed. This has marked a significant shift towards deconstructing the dichotomy between officially recognised science and non-recognised knowledge. The adoption of a comprehensive methodology to address socio-economic and environmental challenges does not remain a guiding principle, as it is followed by the translation into practice and monitoring of concrete models of inclusive participation by those most affected by food insecurity.

To conclude, resilience stories deserve to be told and stand for political symbols of transition. These easily disclose the inadequacy and limits of our current exploitation patterns and recognise the knowledge coming from the complexity and diversity of local and Indigenous systems, as a true heritage rather than folklore. For this reason, small experiences of change coming from the custodians of biodiversity should be carefully cultivated and underpinned, such as those of Indigenous communities. It does not matter if these experiences are too small to counter the strong powers of the world-leading economies. All will listen to and witness their strengths, voices, and multitude.

## 5 CONCLUDING REMARKS

Exposing ourselves to the Indigenous world and reflecting upon the wounds of our beautiful planet and its human and non-human inhabitants equipped us with a long-term vision that starts from and goes beyond the horizon drawn around inclusion, coexistence, and resilience.

Human influence on natural degradation requires a shift in the understanding of our planet treasures as exploitable resources to one that recognises the coexistence of self-regulated, comprehensive systems of physical and human components. In response to this timely need, our vision looks at a new world



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informed by nature's principles and Indigenous worldviews. The model is grounded on the premise that ontological perspectives and processes posited in legal inquiries are subject to *physics* constraints. Therefore, these perspectives and processes must be consistent with the laws of physics (the principle is known as “causal closure of physics”). In pursuing the vision of a fully interdependent, inclusive, and resilient world, we look at the laws of nature as our ruling model. Similarly, Indigenous communities focus on the essential and integrated components of nature to design legal orders in harmony with its communities.

Our vision builds on the achievements of quantum physics and its grounding principles (entanglement, holism, and superposition of states) to design a new ontology of human and non-human relations.

Quantum physics principles can help in the design and formation of the new world, with the principles of entanglement and holism helping to set up the ontology of the model in its interconnected and referential elements (nature and humans, as individuals and communities). Good governance laws endorsed by the novel model regard the actors as holographic (hologram=to write the whole): the actors are conceived as holographic and holistic in the sense that they are regarded as knowledge-keepers of the information that sustains the natural world and its ecosystems. Such information is recorded in each individual and community that deeply depend on nature for their survival. The information rules the communities and is embedded in stories, legends, and traditions that guide the habits and customs of the communities towards the natural world. This novel legal status also has effects on the definition of a participatory rather than a compositional relationship between the parts and a whole: the whole is present *in* the parts, not made up of them.

In addition to a holistic and inclusive vision supported by quantum principles, good governance in the model can benefit from the principle of the superposition of states. This allows the coexistence of different approaches that otherwise would be clashing and incompatible with each other. Applied to the new ontological model, the principle has the potential, among others, to validate the co-existence of state and



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community levels in sustaining humans and nature by contemplating the contemporaneousness of top-down decision-making (state and intra-state decisions) and collective and community-based actions (local and Indigenous decisions). One of the consequences in this application of the superposition of states to the different levels of governance, is the possibility of an interaction and a trade-off between two otherwise conflicting states with entangled and collective impacts in the protection of nature. Consequently, Indigenous and local knowledge becomes an integral part of the regulatory framework with the inclusion of nature's rights as a central part of the protection.

The compatibility between Indigenous worldviews and quantum-like principles also has advantages in the authentication of methodologies (such as indigenous methodologies) that provide significant and successful responses to environmental crises. The observer-created reality, for example, states that observation deeply affects reality. It introduces the importance of the personal experience in physical science and of consciousness and attentiveness in identifying the correct ways to sustain the planet. The legal method alone has not been able to provide this understanding. Observer-created reality is also a common feature of Indigenous cosmologies and consequently, methodologies. All the elements of nature, both humans and non-humans, are acknowledged as possessing agency. Such interpretation of agency places humans and non-humans in a symbiotic relationship, where human consciousness and nature communicate, create, and co-create their relationships. This new ontological perspective needs a nature-centred paradigm, rather than a state or human-centred paradigm. Indigenous worldviews, as deeply interconnected as they are to the natural world and natural world's observations, are essential to restructuring the new world that we as sentient beings can hear breathing on a quiet day.



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