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Introduction

The Alliance on Terraced landscapes

The Editors

The triad of ITLA Journals

ITLA is an alliance of local, national, regional networks with more than 300 members from 35 countries with mountain ranges, where terraces have been invented and constructed for the production of food in optimum conditions – a global heritage of humankind. After three international conferences in Peru (2014), Italy (2016) and in the Canary Islands (2019). ITLA is an alliance of local, national, regional networks and associations. Our guiding principles for the promotion of terrace farming are written in the Padova Manifest, and our activities of organising conferences and local encounters, promoting publications, lobbying for the recognition of terraced landscapes as human heritage, and linking people, researchers, activists, guardians dedicated to terraces are defined in our Action Plan.

Our concern has been and is to preserve the knowledge and wisdom about terraced landscapes. Terraced landscapes experienced disenchantment with the process of industrialisation of agriculture, therefore we aim at a process of reenchanting the terraces and its diverse food crops as part of the recovery of Food Sovereignty for the wellbeing of the people.

With this intention, ITLA has been publishing the following three journals since 2020 (http://www.itla.si):

- The Journal on Terraced Landscapes (JOTL) which contains research papers and scientific studies on terraced landscapes that have intensified in recent decades.
- The Art of Terraced Landscapes Journal which includes all kinds of artistic expressions.
- The ITLA Journal, which collects and presents experiences of our networks and members and includes short descriptions of terraced landscapes and collective action, voices from the terraced fields in collected testimonies, presentation of successful and exciting initiatives by local farmers and gardeners, conclusions about the value and relevance of terraced landscapes which have been the results of our encounters and deliberations of our movement of terrace lovers and researchers. We also provide space in this ITLA Journal for the future activities of the alliance and the methodologies and contents of the forthcoming 5th Congress in Bhutan.

Membership and Newsletter

The ITLA Journal stands on its own, it does not replace the ITLA Newsletter, which contains messages from our members about their activities, announcements of meetings and courses, publications. In the Newsletter we send out updated news of events and actions, not long descriptions or analysis. We invite our ITLA members to contribute to the ITLA Journal with their stories from the field, their review of the network activities as well as proposals for the Alliance and its governance.

ITLA Committee Meeting and European Day of Terraced Landscapes

The pandemic has reduced and nearly stopped our collective activities of meetings, conferences and face-to-face work on terraced landscapes. In August 2019 we could hold the last ITLA Committee Meeting in Goriška Brda in Slovenia after the European Day of Terraced Landscapes in Vrtovin. We expect to be able to organize the Second European Day of Terraced Landscapes in 2023 and have the opportunity to reunite the ITLA Committee for the preparation of the contents and format of the 5th Congress on Terraced Landscapes in Bhutan in 2024.

Contents of this issue

This issue of the ITLA Journal includes the Congress results from Spain (2019), the information about the discussions and activities of the Peruvian section of ITLA led by the Center Bartolome de las Casas from Cusco and the information about traditional irrigation in Europe as a candidate for world heritage of UNESCO.

Congress results from Spain

During the First International Terraced Landscapes Conference in 2010 in Mengzi, China, 53 participants constituted the International Terrace Landscapes Alliance (ITLA), and all participants endorsed the Honghe Declaration, which has oriented ITLA's commitment to preserve, protect and promote terraced landscapes and cultures:

"In order for the terraces to survive, we must combine a respect for tradition and indigenous knowledge with modern methods and expertise. It is only in this way that we can guarantee a healthy future for the terraces and the unique human contribution that they represent."

The guiding methodological principle of the 4th ITLA World Congress of La Gomera and

in Macaronesia about the Re-enchantment of the Terraced Landscapes was the creation of democratic spaces for deliberation between the inhabitants, the activists as well as the researchers of the terraced landscapes in the mountainous and coastal regions of the world. After fieldwork on 8 islands the 4 working groups of Living, Wisdom, Learning and Working discussed in La Gomera their topics, visions and proposals for action, which were presented graphically by the team created by Carlos Jimenez at La Laguna. The presentations of the 4 groups were summarized as the conclusions of the 4th Congress by Tessa Matteini from UNISCAPE (Florence, Italy), Michel Pimbert from CAWR, Coventry University (UK), and Lučka Ažman, the scientific coordinator of the Congress and professor from the University of Ljubljana, Slovenia.

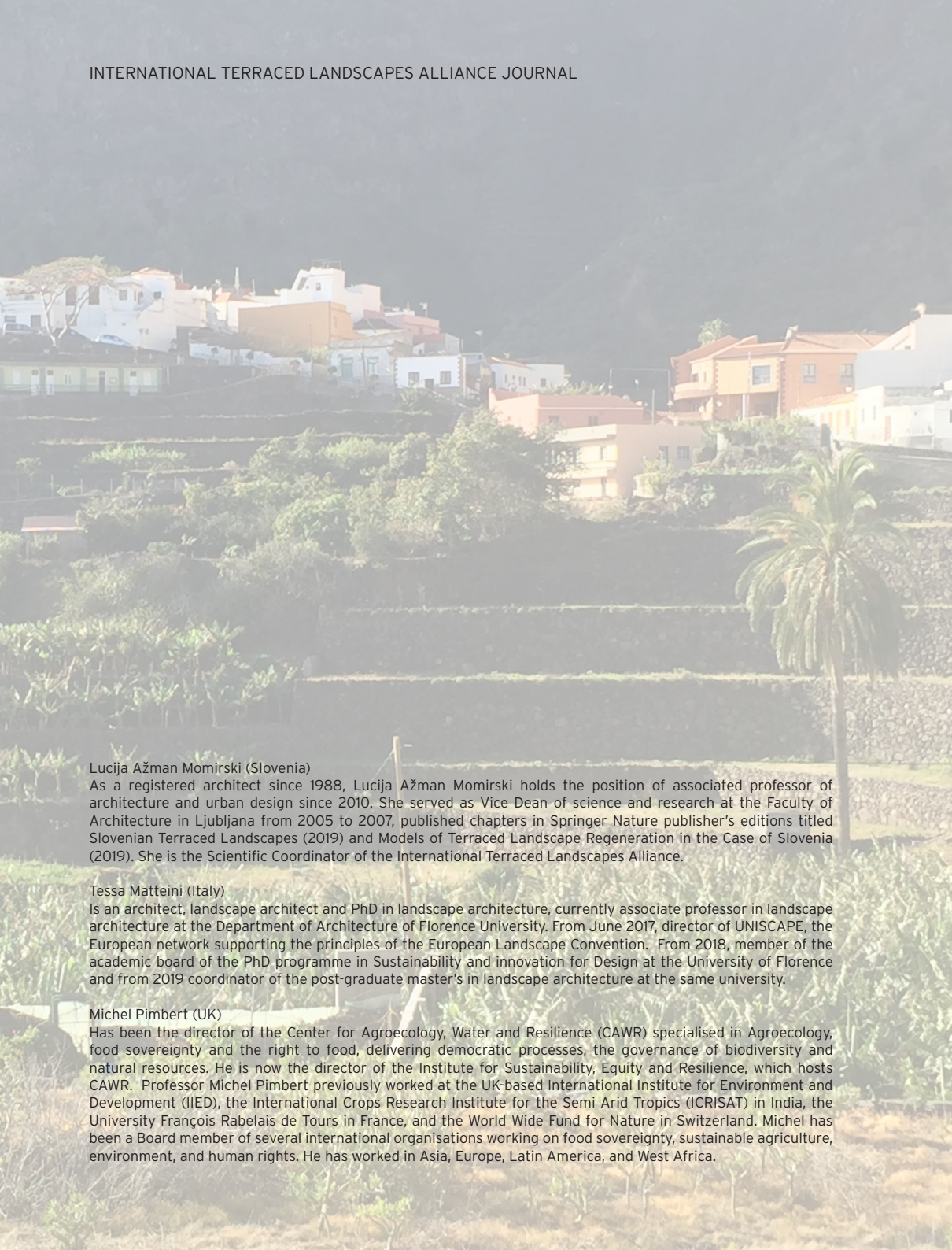
ITLA Peru dialogue processes since 2020

Following the work of Mourik Bueno de Mesquita the Center Bartolome de las Casas and its director Carlos Herz has committed to constitute the Peruvian network and section of ITLA by organizing thematic online conferences with researchers, activists and farmers. The pandemic had the impact on the local communities as due to the contact restrictions of the national policy thousands of people lost their employment and walked back to their mountain communities. Terraced fields then were planted again with food crops for self consumption and local markets. ITLA Peru has proposed to implement a research project in Cusco and in more mountain regions about Women and Terraces and the strengthening of the wisdom and voices of Quechua women farmers for the recovery of the abandoned terraces (70 % of the historically terraced lands).

Traditional irrigation in Europe – candidate for world heritage of UNESCO

Today, traditional irrigation, as the lowland irrigation or hillside irrigation, is threatened with abandonment. In many places, technical irrigation systems have caused the disappearance of the tradition of irrigation of meadows, vines and gardens. Nevertheless, great efforts are visible internationally to preserve or reactivate this culture. Climate adaptation and biodiversity promotion, but also social integration are new important functions of traditional irrigation techniques.

On 30 March 2022, the application "Traditional Irrigation in Europe: Knowledge, Technique and Organization" was submitted to UNESCO for inclusion in the "Representative List of the Intangible Cultural Heritage of Humanity". Austria took the lead in preparing the application together with Belgium, Germany, Italy, Luxembourg, the Netherlands and Switzerland.



Lucija Ažman Momirski (Slovenia)
As a registered architect since 1988, Lucija Ažman Momirski holds the position of associated professor of architecture and urban design since 2010. She served as Vice Dean of science and research at the Faculty of Architecture in Ljubljana from 2005 to 2007, published chapters in Springer Nature publisher's editions titled Slovenian Terraced Landscapes (2019) and Models of Terraced Landscape Regeneration in the Case of Slovenia (2019). She is the Scientific Coordinator of the International Terraced Landscapes Alliance.

Tessa Matteini (Italy)
Is an architect, landscape architect and PhD in landscape architecture, currently associate professor in landscape architecture at the Department of Architecture of Florence University. From June 2017, director of UNISCAPE, the European network supporting the principles of the European Landscape Convention. From 2018, member of the academic board of the PhD programme in Sustainability and innovation for Design at the University of Florence and from 2019 coordinator of the post-graduate master's in landscape architecture at the same university.

Michel Pimbert (UK)
Has been the director of the Center for Agroecology, Water and Resilience (CAWR) specialised in Agroecology, food sovereignty and the right to food, delivering democratic processes, the governance of biodiversity and natural resources. He is now the director of the Institute for Sustainability, Equity and Resilience, which hosts CAWR. Professor Michel Pimbert previously worked at the UK-based International Institute for Environment and Development (IIED), the International Crops Research Institute for the Semi Arid Tropics (ICRISAT) in India, the University François Rabelais de Tours in France, and the World Wide Fund for Nature in Switzerland. Michel has been a Board member of several international organisations working on food sovereignty, sustainable agriculture, environment, and human rights. He has worked in Asia, Europe, Latin America, and West Africa.

Key Issues in Terraced Landscapes (TLs)

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ABSTRACT

During the Fourth ITLA World Congress on Terraced Landscapes, held on March 21st, 2019, at the Visitor Center in San Sebastián de La Gomera, Spain, a roundtable discussion was held to contribute to reflections on terraced landscapes, focusing on the main themes of the congress, experiences, and thematic lines. The four thematic groups that formed the central content addressed various inherent aspects of terraced landscapes, as well as conceptual and instrumental statements that outlined the strategic objectives of the fourth congress. The questions, issues, and definitions considered within these thematic groups were 1) Living: places of wellbeing in terraced areas; 2) Wisdom: recovering the memory of terraces through actions, infrastructure, and projects; 3) Labor: construction and protection of terraces; and 4) Learning: generating knowledge and innovations in terraced areas. Based on the experience gained during the field exploration, the congress presentations, and the discussions between participants, some of the most important observations are summarized.

KEYWORDS

terraced landscapes, living, wisdom, labor, learning

Living how?

Terraced landscapes (TLs) are highly complex systems, places of wellbeing, and places of continuous settlement, where new forms of living and inhabiting terraces develop. TLs are connected with the notion of identity, which is the condition or fact of being specific—that is, individual. Their meaning is linked to the essence, fundamental nature, or most important quality that makes something what it is.

TLs contribute to the identity and profile of local cultures, are an important part of people's quality of life, and ensure diversity and making a region attractive, thus preserving settlements and the vitality of rural areas. Identity plays a role in reestablishing the connection with the "land of one's forefathers." In many cases, young people are returning to forgotten farms inherited from their parents. This connection, however, not only refers to possession but can also describe affiliation acquired through caring for the land.

The identity of a region is rooted in both built-up areas and the landscape. The Landscapes of the World Heritage List include cultural landscapes that are part of people's collective identity. They are protected because they illustrate the evolution of human society and settlement over time.

Key challenges in rethinking TLs as places to live are **multifunctionality and physical/cultural accessibility.** A dynamic landscape should be explorable and filled with various functions in order to increase its complexity and diversity.

Both multifunctionality and accessibility seem crucial in integrating these particular kinds of heritage landscapes into their context and in supporting and enriching them, providing new opportunities for their residents as networks of places to rest in, to enjoy, or to use a wi-fi connection.

In this sense, we should rethink an "island network" model, in which each farm is connected with the others through both ecological/biological corridors and social/economic/functional/human relationships.

Reinventing TLs is probably the only way to save them from extinction through adaptive use, seeking **to combine the traditional way of living and "producing landscapes" with a contemporary attitude open to innovation for the inventive conservation of agricultural heritage.**

More endogenous forms of development would be based on decentralised planning as well as **citizen decision-making that prioritises local knowledge, analysis, and definitions of wellbeing.** An interesting proposal is to set up a **Peasant observatory of TLs** to oversee and guide the regeneration of local ecologies, economies, and wellbeing.

Participants did indeed emphasise the **possibilities of regeneration based on place and conviviality.** But, this requires innovations that foreground and build on i) citizens' participatory action and participatory budgeting; ii) agricultural extension with knowhow in agroecology; iii) subsidies to support terraces and community initiatives in these landscapes; iv) enabling closer links and economic exchanges between TL farmers and local businesses (e.g., hotels and restaurants) as well as schools, hospitals, and public canteens (via local food procurement schemes); and v) linking community initiatives into larger federations to coordinate local adaptive management, economic exchanges, and the governance of TLs over large areas on and between islands in the region.

Wisdom of whom?
Wisdom for whom/what?

Wisdom and the ability to think and act with knowledge about processes in TLs have disappeared. Terraced areas have become landscapes of ignorance at many levels. Not only are they abandoned, but the understanding and appreciation of TLs has been lost. Wisdom related to TLs includes the proper application of knowledge, theoretical (explicit) or practical (with practical skills, implicit) understanding of the uniqueness of TLs, and actions based on a deeper understanding of TLs by recognizing differences and similarities between TLs in the world. **TL wisdom is a multi-layered expertise that includes material, social, and emotional experiences, and it acknowledges the causes**

and effects of processes within these landscapes.

An aware TL wisdom could be achieved using various tools and practicing the effective integration of competences and disciplines.

A shared **Glossary of TLs and of TL technologies** adopted and implemented through a broad network of farmers, agronomists, and various experts could be a formidable tool for creating a wisdom community, where is possible to exchange best practices, traditional knowledge, and innovative solutions.

The wisdom of past TLs does not exclude contemporary knowledge (technologies); on the contrary, it brings with it an insight into **a combination of earlier models of life and work in TLs compared to modern models of the same kind.** Contemporary knowledge also does not exclude the wisdom of past TLs, but when people become connected to earlier models they cannot solve current challenges—and landscapes are undergoing constant change and transformation. Similarly, within TL processes, relationships, contexts, and scenarios constantly evolve and are identified. Common sense and community wisdom, based on practical judgements about all matters, are also changing.

In TLs one must think and act with knowledge, experience, and understanding at different levels, using a combination of past wisdom and modern technologies such that it becomes a progressive process of enchantment of TLs.

Working for whom?
Working how?

Consequence of work:

TLs are significant landscapes with dominant landscape elements in many countries. This is confirmed by the inclusion of several TLs in the World Heritage List. TLs are important areas for producing healthy food. TLs are influential in many ways.

Consequence of no work:
With the **loss of arable land** that becomes non-farmland, we not only loose protection from natural hazards, but also farmers, families, communities, and so on.

This process also leads to the **loss of agrobiodiversity, and of ecological and cultural complexity**, and heritage landscapes gradually become abandoned places without opportunities.

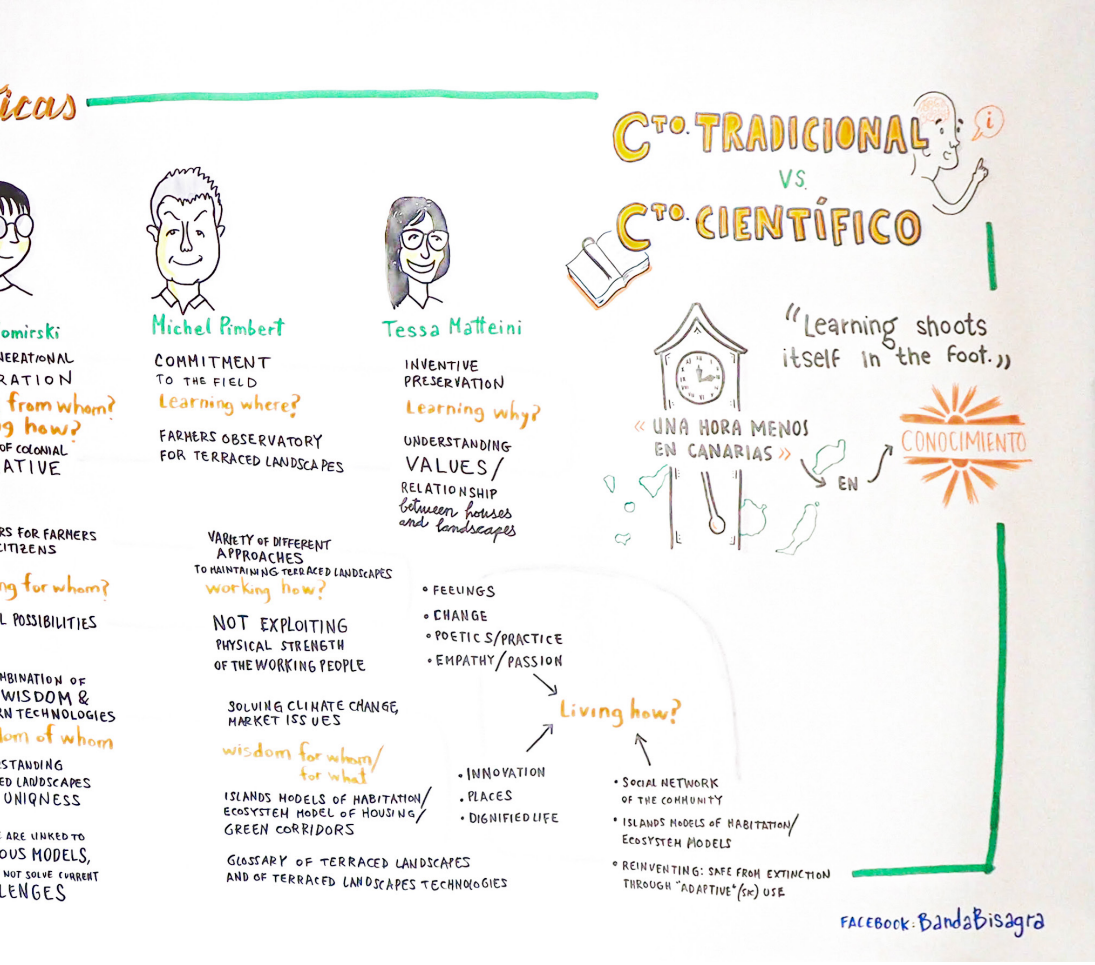
Migration and climate change, often seen only as challenges to landscapes, could be rethought in order to preserve and revitalize TLs.

In this sense, migrants could find **a new dignified life by becoming farmers in heritage TLs,** and climate changes could be interpreted in order to introduce different species of crops that are more adaptable and resilient, also exchanging best practices and knowledges within an international farmers' network. There are a variety of different approaches **to keeping TLs alive** and continuing work in TLs.

Being alive means thinking about reusing abandoned TLs, whether they serve as a source of inspiration for successful projects by artists and designers, or whether they could economically stabilize and revitalize the local region. **Intensive agriculture has no priority over extensive agriculture in TLs** because extensive agriculture has quality characteristics that cannot be achieved through intensive production.

TL technologies developed in response to the natural environment and human exertion. **There are a variety of traditional and new construction methods and water-management methods** adapted to the natural and cultural conditions related to climate change, the materials available (stone and earth), technological development, and the conditions of the area (water, climate, and slopes), as well as a variety of working systems, from the traditional techniques of building dry walls, to irrigation and water control, to new TL construction systems.

Figure 1. Banda Bisagra, a group of visualisers from La Laguna led by Carlos Jiménez, developed this poster of the intervention of the three authors (photo by Lucija Ažman Momirski).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LENGES
Michel Pimbert
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FOR TERRACED LANDSCAPES
Tessa Matteini
INVENTIVE
PRESERVATION
Learning why?
UNDERSTANDING
VALUES/
RELATIONSHIP
between houses
and landscapes
VARIETY OF DIFFERENT
APPROACHES
TO MAINTAINING TERRACED LANDSCAPES
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OF THE WORKING PEOPLE
SOLVING CLIMATE CHANGE,
MARKET ISSUES
wisdom for whom/
for what
ISLANDS MODELS OF HABITATION/
ECOSYSTEM MODEL OF HOUSING/
GREEN CORRIDORS
GLOSSARY OF TERRACED LANDSCAPES
AND OF TERRACED LANDSCAPES TECHNOLOGIES
• FEELINGS
• CHANGE
• POETICS/PRACTICE
• EMPATHY/PASSION
Living how?
• INNOVATION
• PLACES
• DIGNIFIED LIFE
• SOCIAL NETWORK
OF THE COMMUNITY
• ISLANDS MODELS OF HABITATION/
ECOSYSTEM MODELS
• REINVENTING: SAFE FROM EXTINCTION
THROUGH "ADAPTIVE" (SK) USE
C^TO. TRADICIONAL
VS.
C^TO. CIENTÍFICO
"Learning shoots
itself in the foot."
« UNA HORA MENOS
EN CANARIAS »
EN
CONOCIMIENTO
FACEBOOK: BandaBisagra

Active engagement and open dialogue of the people living in TLs is necessary because **TLs are suppliers of healthy food and beautiful landscapes** for other communities and citizens. In this respect, the farmers work for their livelihoods and for all citizens, demanding equal opportunities and the recognition of their work.

Learning from whom? Learning how? Learning where? Learning why?

Generating knowledge and innovation in TLs means involving actors and actions, skills, values, and preferences, promoting the voices of different participants, and bringing in the attitudes, activities, and interests of people in TLs.

There are several levels of learning about TLs. First is recognizing the existence of TLs, recognizing the values of TLs, and recognizing the deterioration of the material heritage of TLs and the consequences of such deterioration. Mapping existing TLs, abandoned TLs, and TL heritage is essential for commitment in TL areas and is also the basis for innovative preservation of TLs.

Learning is a process of acquiring new or changing existing knowledge, either through separate experience or through the experience of everyday situations, through targeted and organized learning, and through participation. The key questions remain: who are the actors in the learning process and what are their motivations for learning?

Social learning for change was also featured in a number of presentations on TLs in the Canaries, Madeira, and the Cape Verde islands. It was acknowledged that learning can best happen through the meaningful use of the senses (touch, smell, seeing, physical sensations, etc.); there are many forms of experiential-based intelligences other than the purely cognitive intelligence of the mind.

TLs are presented as "**landscapes of opportunities**". However, realising the potential of

these opportunities requires a very different model of learning and innovation—a shift from the transfer of technology model to learning and action rooted in the **decentralised and bottom-up production of collective knowledge.**

Experiences and explorations from within, from participatory fieldwork, offer a variety of conceptual approaches to understand and explain the situation of TLs. New narratives move away from colonial, external views, towards internal, de-colonized minds. Most presentations on TLs (across the Canary Islands) explicitly or implicitly call for a **reversal of the colonial narrative**, which is based on the needs and visions of powerful others.

Figure 2. The four working groups presented the posters of the discussions on living, knowing, working and learning on terraces (photos by Timmi Tillmann).

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Primary school teacher with a master's degree in intercultural bilingual education (Quechua - Spanish). Specialist at the Paucartambo Local Education Management Unit. Advisor for the Bartolomé de las Casas Centre in Cusco. Trainer of VIPP Facilitation and participatory action research. Consultant for intercultural issues in education in the Andes.

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ITLA and Reenchanting Terraces in Peru

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ABSTRACT

In Peru there are currently about one million hectares of terraces of different characteristics that integrate Andean Amazonian territories (Agrorural, 2021; Massón, 1993). Of these, approximately 40% are in production thanks to the management of the peasant communities integrating life, water and territory. Peru is a very diverse tropical mountain country, ranging from one of the driest deserts in the world to the highest rainfall tropical forests. It is cultivated from sea level to over 4000 m above sea level and the terraces integrate the territory harmoniously, interrelating water and soil management especially in the Yunga and Quechua regions (2000 to 4000 masl) (Pulgar Vidal, 1981). We analyse the importance of the Andean terraces for the Buenvivir (Wellbeing) of the Andean communities based on the presentations by 25 activists, researchers and peasant farmers in five virtual conferences since November 2020 until May 2021 organised by ITLA Peru coordinated by the Center Bartolome de las Casas that led to review the political proposals of commercial production vs. the application of Andean peasant agroecology. We practice an intercultural approach in field research during 2021 and propose it for the organisation of the International Seminar on Andean terraces in the context of modernity to be held in the first semester of 2022. We propose to rethink an alternative development from the mountain perspective by decolonising the mainstream concepts thought from the plains and the cities.

KEYWORDS

Andean terraced landscapes, Peru, agroecology, intercultural approach, ITLA Peru

1. INTRODUCTION: THE CONTEXT OF THE INTERNATIONAL TERRACED LANDSCAPES ALLIANCE

The Center Bartolomé de Las Casas, located in Cusco, the heart of the Andes, is a nexus of encounters between cultures, disciplines and worlds. Committed to marginalised peoples, it promotes the emergence of autonomous social actors in a democratic and intercultural society through research, education and the dissemination of knowledge. The construction of governance of natural resources, based on inclusion, sustainability, social justice, intercultural dialogue and gender equity. These institutional lines are expressed in the strategic axes - and the issue of terraces involves not only construction technology, but also the defence and management of water and territory, agro-ecological management for food sovereignty, an intercultural approach and prioritising the voices of women as part of a gender equity policy.

In 2014 the CBC and the International Terraced Landscapes Alliance (ITLA) organised the Second World Congress of Terraces in Cusco (Tillmann, Bueno de Mesquita, 2015) (Figure 1). The most important proposals formulated in the conclusions of the II ITLA

Figure 1. II. Congress in Cusco (photo by Timmi Tillmann).

Congress were: make terraced communities visible as food producers to the urban society; organise a network of terrace farmers; include Andean knowledge in university studies in natural and social sciences; in terms of governance, the recognition of terraces as a source and basis for small family and community agriculture for the production of organic and healthy quality food with rich biodiversity. It was also proposed that terraces be recognised in the respective laws on water resources, environmental and watershed management, and in rural development, cultural landscape, tourism and land-use planning policies. The last proposal to be mentioned here refers to the role of terraces in rainwater and groundwater harvesting as part of climate change adaptation strategies.

Studies on peasant communities show the wealth of forms of organisation and democratic management of resources developed in the Andes that are comparable to other forms of traditional social organisation in rural societies with terraces, such as the ethnic groups of the Red River Valley in China and Vietnam, the Ifugao in the Philippines, and the rice cultivators of Hindu tradition on the island of Bali in Indonesia. There is an organisational wealth of natural resource management that continues to exist but is threatened by modernisations that do not value smallholder farming in the world.

At the fourth congress in the Canary Islands in 2019 entitled "Reenchanting Terraces" we coordinated with Mourik Bueno de Mesquita and agreed to form the Peruvian Alliance of Andenes (ITLA Peru) following the recommendations of the 200 participants from the Second Congress in Cusco, among them more than 80 community members from the Andes, who asked to commit themselves as peasant families, as Andean communities and valleys to value and organise themselves to rebuild the abandoned terraces.

Due to the pandemic, the 5th World Congress in Bhutan in 2022, which was intended to broaden the horizons with the aim of decolonising the concepts and methods of the Eurocentric development policy for terraced landscapes, cannot take place. While we are waiting for the possibility to organise the 5th Congress from 2023 onwards, we are organising together with the CBC the International Terraces Seminar, one of several Seminars linked to the strategic axes of CBC to be held when it will be possible. The

Seminar on Buenvivir in the Andenes will be organised in 2023 in the format of a knowledge, seeds and food fair, a cultural festival, debate workshops, policy proposals, strengthening of the ITLA Peru Alliance and exchange of experiences promoting an intercultural approach. It will have a communication strategy to influence regional and national policies.

2. METHODOLOGY: A DIALOGIC PROCESS

Between November 2020 and May 2021, we organised 5 dialogues with a total of 25 farmers, activists and academics on 5 themes related to the Andenes: Territory and Landscapes, Infrastructure and Water, Agroecology and Agrobiodiversity, Food Sovereignty and Inventories of the Andenes. These were events whose results have clarified the bases of experiences from different perspectives for the International Seminar and contributed with knowledge and themes that we summarise here based on the transcripts to highlight the importance of the Andean terraces in the Peruvian Sierra to feed the people. At the same time, we talked with rural women from Quechua communities in Cusco about the impact of the pandemic of COVID 19 on their lives and the production of food to ensure the subsistence of their families.

3. TERRACES: A VIEW FROM THE APUS AND NOT FROM THE PLAINS OR FROM THE CITY

Through the discussions we have realised that the Andean terraces do not fit into the agro-industrial scheme that prioritises commoditisation, monoculture, the use of chemicals and pesticides/herbicides, and that seeks to export the harvests as part of a national policy. The Andean terraces are part of a peasant alternative that offers quality of life in the Andean countryside where the wise men and women are recognised and valued. The provincial people are despised in the cities where ignorance of the Andean nature that feeds them reign supreme. Policies and mainstream academics have traditionally described the

Andean areas as marginal, poor, needing hard work and low productivity because they have looked at this mountain agriculture through the eyes of the plains (often Europeans from temperate climates) and from the perspective of agro-industry, the production of goods for the market. They thought that marginal populations were pushed up the slopes because there was no more room on the plains to grow edible plants. We had not realised that the terraced areas have great advantages over the plains: water harvesting and management, erosion control, solar energy capture, crops associated with healthy and tasty food, thanks to the cultivation of farms by peasant communities encouraging reciprocity.

The terraces as part of the high slopes in the Andes are an expression of respect for the *Apus* (Mountain gods and goddesses) who provide water and protect the crops and seeds. For this reason they make an offering to the *Apus* and to Mother Earth (*Pachamama*) each sowing, asking for protection of the crops against drought, frost, hail and good life for the communities (Figure 2).

Figure 2. The women of the Cotahuasi valley bring four-coloured chicha for the offering to the Apus and Pachamama (photo by Timmi Tillmann).

3.1. Terraced landscapes: a subsistence culture and economy

The diversity of agricultural systems in the Andes, including terraces, integrates the relationship between humans and nature with great harmony and sustainability. Terraced landscapes in particular, conceived by different civilisations on all continents of the world, looked to the mountains not as an obstacle but as a source of life to nourish their populations with a variety of foods. The future of terraces in Peru is threatened by a developmentalist globalisation that standardises agricultural societies denying the fine balance between land, water, climate and food production that have nurtured cultural diversity in the world.

The colonial conquest meant the rupture of a state system that fed millions of settlers and the administrators of the Inca empire. In less than 100 years, 90 % of the population disappeared due to disease and forced labour - the *mita* - in the mines and construction of Spanish administrative towns to satisfy the greed of the Spaniards. The consequence was the decline of food production and the abandonment of agricultural systems, especially the terraces and the loss of water sources. Although the demography has recovered in recent centuries, since the 1960s the rural highland communities suffered again the exodus of young men and women with migrations to the cities in search of work and a disregard for food production on the Andean terraces because it did not correspond to the urban models of commercial development in contrast to the subsistence economy.

The inhabitants of the Andes were able to modulate the landscape (Figure 3) and varietal richness to acclimatise them to the new farmland. This resulted in an increase in agricultural and landscape biodiversity. This is the opposite of the new "reductionist" agriculture, which simplifies everything it touches, destroys the landscape, its inhabitants and the local agricultural wealth, creating a demographic and biological desert, the opposite of what the inhabitants of the Andes achieved (Treacy, 1989).

Figure 3. Cotahuasi Valley landscape (photo by Timmi Tillmann).

3.2. Water, Territory and the Climate Crisis: resourceful management of terraces

Water is fundamental to the existence of the terraces and to achieving harvests of various crops. The territory - the landscape - is domesticated by the inhabitants of each area, often ethnic and native groups, according to the conditions they encounter - the climate, the soils, the shape and relief of the mountains - and they shape it with plants and animals into an integral system of agricultural husbandry. Impressive works of art and hydraulic engineering, which have enabled the survival and self-sufficiency of generations, were created by ancient cultures from Caral almost 5,000 years ago with a later widespread and still visible diffusion by the *Wari* society more than 1000 years ago (Canziani, 2017). The Incas perfected the administration of the terraces and the storage and distribution of food.

These are among the most ingenious systems in human history, but despite this they currently face serious difficulties and threats to their survival. Some of them are: migration as a consequence of the modernisation and industrialisation of societies, water contamination by mining, the expropriation of water by users from outside the area (new irrigation areas,

mining, drinking water from large cities), the use of agrochemical technologies that spoil the water, climate change that does not correspond to known historical conditions. The Andes were created for food production, the ancestors domesticated the mountains, and as a result of Andean knowledge they offer us a potential defence against the climate crisis by mitigating droughts, varying agro-ecological zones, taking advantage of warming and defending soils and crops.

It is therefore very important to study the potential of these heritage systems (Figure 4) and the management of the territory, in order to propose actions on how to strengthen the terraced territories in the hands of the communities that have inherited the historical heritage of domestication and food breeding. The exchange of international experiences will provide knowledge to strengthen an international movement in favour of water users and to define technical, social and legal measures to defend water against threats.

Figure 4. Perfect water irrigation systems (photo by Timmi Tillmann).

3.3. Rehabilitation of terraces: wisdom of the stone builders

Several attempts at inventories of terraces in Peru have yielded contradictory data. The latest effort by Agrorural, with funding from the IDB, indicated the existence of 340,000 ha of terraces in 11 regions of Peru. The inventory data reveal that most of the terraces were built in the Yunga, Quechua and Suni areas between 2000 and 4000 meters above sea level. Reviewing the maps made in cabinet based on satellite images in the years 2012-2014, by a consortium led by DESCO (Agrorural, 2021), we have found a difference of 30 % of identified terrace zones. Luis Massón (1993) mentioned the figure of 1 million ha of terraces in Peru 40 years ago. For example, for the Puno region, Díaz and Velásquez (1992) in the framework of the WaruWaru project identified 122,000 ha of terraces for the region of Puno, mostly abandoned, while Agrorural presents 23,000 ha for Puno with a minimum percentage of abandoned terraces (2,800 ha) (Tillmann et al., 2021). There is also an inventory blindness about the abandonment of extensive areas of terraces on the coast because they were left with the arrival of the Spanish and the rupture of the system of food transport between different regions organised by the Inca state with the principle of verticality (Murra, 2020; Tillmann et al., 2021).

There are multiple forms of construction, many variations of irrigation and drainage channels, different heights according to altitudes, agro-ecological zones, climate, relief and traditions. We find covers to protect tools and farmers against sun and rain, and in some regions altars to offer to the *apus* and the *pachamama* at the time of sowing and harvesting.

The construction of terraces combines engineering with knowledge of climate, plants, water management, relief and the art of construction that beautifies the landscape and protects it against avalanches and landslides. Today there are new experiences of terrace building schools all over Europe with mountains (the profession of the stone mason was recognised as a UNESCO World Heritage in 2019).

There is a division of labour in the construction and operation of the terraces. For their construction (Figure 5), there are qualified stonemasons known in their communal

Figure 5. Stone walls on the Eatsern slopes in Cuyo Cuyo – Sandia (photo by Timmi Tillmann).

neighbourhoods, and there are the field mayors who oversee the irrigation and organise the cleaning of the ditches or infiltration ditches each year.

3.4. Traditional knowledge on agricultural terraces

The creation of "artificial microclimates", smoothing the mosaic of natural microclimates by establishing an intelligent relationship between altitude, the vegetative cycle of crops, water requirements, and the control of available water used for agricultural production, finding a linear relationship between water flow and topography. This ensures larger, more concentrated and less fluctuating yields. Terraces are optimal systems for quality food production, and prove to be more productive than agro-industrial systems on flat land (Felipe Morales, 2021). Farmers take advantage of the benefits of terraces: water control for irrigation, solar heating of stones, suitable seeds and natural fertilisation techniques without poisons.

The traditional knowledge of farming terraces can be extremely important in facing the two major challenges facing Andean agriculture today (Figure 6) : the climate crisis and the food crisis. The land-use change brought about by the management of agricultural terraces represents a great opportunity to address climate change mitigation and adaptation, as well as to strengthen food security strategies at local and national levels.

The problem of the disappearance of traditional knowledge linked to the abandonment of terraces, the migration of youth out of the communities, the disdain of urban society for peasants and manual labour, the denial of Quechua and Aymara cultural identities (where most of the terraces are located) and an education focused on modernity and the cities, and not on peasant life linked to respect for nature in the understanding of the dialogue between humans, nature and the deities (all considered living beings) continues to be a problem.

Figure 6. Andean crops on terraces in Moray (photo by Timmi Tillmann).

3.5. Agrobiodiversity and Food Sovereignty (seeds, food and organic agriculture)

The Andes have been the cradle of domestication of food plants of great importance in the world, belonging to the eight Vavilov centres of origin of plants. Mario Tapia (2021), in his presentation at the 3rd conference in February 2021, names 30 species of Andean crops including tubers, grains, roots and fruit trees, among them potatoes (8 species of *solanum tuberosum*), maize (*Zea Mays L.*), quinoa (*chenopodium quinoa*), lupines (*lupinus mutabilis*), pumpkin (*cucurbita maxima*) and avocado (*persea americana*), which contribute widely to human nutrition in the world (Figure 7).

Crop management in Andenes was, and should continue to be, ecological and organic, since soil fertility is based on the good use of organic matter: guano, stubble, compost, etc. Likewise, by promoting crop diversity or agrobiodiversity, the presence of biological pest controllers is also promoted, not requiring the use of chemical pesticides. The Andenes were and should continue to be an efficient agricultural technology, constituting the pantry of healthy and nutritious food for peasant families.

Andean populations have lost control of their resources and food despite having family and communal lands that could produce abundant food. There are communities that have exchanged agricultural production for tourism or seasonal work, losing their food sovereignty. This must start with the recovery of their terraces, the control of water sources (against contamination and theft by extractive industries) and the conservation of the diversity of their local seeds, which are a treasure of humanity. These actions are part of an Andean cultural reaffirmation approach.

Figure 7. Seed diversity from terraced landscapes (photo by Timmi Tillmann).

3.6. Social organisation for the use and management of terraces, plants and animals in different agro-ecological zones

For sowing, there is a tradition of reading the signs of the sky and of the flora and fauna, and there are the wise men and women who communicate with nature and the deities, who are widely recognised by their communities (Figure 8). And above all, the older women keep their own gene banks in the larder, and they also change and expand the varieties along the seed trails in the highlands.

There is a multiactivity of the farming families - there are many sources of income or of food and resources also through barter - but the basis is the management of their farms in different agro-ecological zones at different altitudes. The vertical management

of the territory linked to the reading of the signs makes it possible to optimise the use of resources and to obtain sufficient harvests to feed the family and relatives for more than one year. Families that cultivate the bitter potato make chuño (dehydrated potato) and can store it for ten years or more as a safe food in times of drought. The terraces are part of the peasant agricultural system with optimal productivity due to their physical conditions and the human labours that keep them fertile. Farmers see the cause of droughts (simply called climate change) in the breakdown of traditional order, lack of respect for elders and traditions, social and domestic violence, mistreatment of the trinity between humans, nature and deities, and pollution by large industrial complexes (Tillmann, 1997).

Figure 8. Peasant group on terraces celebrating a ritual for the protection of seeds in Raqchi, Sicuani, Cusco (photo by Timmi Tillmann).

3.7. Governance of terraced landscapes and human development. State policies, legislation and local rules

There are traditional laws of the communities - forms of land management and knowledge embodied in customary rules and rituals in the agricultural cycle - that are not considered or known from the outside. Looking at the state policy situation, the problems faced by the guardians of the terraces and their legal political potential, we must build possibilities for action to change policies and think about national and regional measures. We must take advantage of international legal conventions to defend the rights of communities for the common good.

Terraces are not marginal, but offer optimal conditions for the cultivation of quality and quantity of healthy food. Unfortunately in history they have been seen from the cities as second class compared to the plains, but the reality is different: they are the best production systems in the mountains thanks to a tradition of collaborative and non-individualistic work necessary to survive in the mountains. From history and from nature, a democratic and shared organisation is proposed to manage the territories in the Andes.

3.8. Perception and consequences of the COVID 19 pandemic

Since 15 April 2020, Peru has been in a state of emergency due to the presence of COVID 19. In the particular case of Peru and in the Andean area of Cusco, the panorama was the same as in all areas: panic, fear, extreme measures, compulsory isolation, among other actions were the ones that were generalised all over the world. But what happened in rural areas, in the high altitude areas, in the peasant communities of Cusco? In external observations, one could deduce at first glance that it was the same. However, in the first month, people who had left their communities in search of work in Lima or Arequipa began to return for almost the same reason, to try to survive the pandemic.

The first information on remigration could be obtained from educational sources, many children and their families began to return to their territorial roots, and reports came in that many of them had no work and had to return to their land to eat what they produced. This phenomenon resulted in the recovery of farmland, including abandoned terraces or

terraces that had been used to grow crops for trade. Parents said "We need to eat and here we cannot work, in my community I have my land, my animals, my children can have food, it is better that they repeat the year, that is why we are going to go to Accha" (Father of a family, connectivity diagnosis, 2020).

During the meeting of Acomayo women, called Saywa warmi, we talked to some Acomayo leaders, who are not seen wearing masks while interacting with each other, and we asked them what they think about what we are experiencing: *"Hinallataq kayta khawachkayku, ñuqaykuka qhallilla purishkayku, manan manchanachu, runakuaqa pura wachaykuchkanku wasi ukhupi, allinta mikhuyku, allinta upyayku ima, chaywantaya allinta kawsasayku" "That's just the way we are living, we should not be afraid, eat well, drink plenty of fluids, stay in the house so that we can stay well"* (LQM 20/06/2021). It is important to state that respect for the stranger is what makes them well, to take care of them as they should, not to look at them with fear but with wisdom, will make all this happen and will not affect people.

4. CONCLUSIONS: DECOLONISING CONCEPTS TOWARDS THE RE-ENCHANTMENT OF THE ANDENES

In order to re-enchant the terraces (La Gomera, 2019) as part of a post-development paradigm shift (Kothari, 2019) ITLA members have proposed the following actions:

- Diversified organic food production on terraces by small-scale producers achieving healthy living conditions and wellbeing (ETC-Group, 2017).
- Knowledge networks with a collective and intergenerational effort based on an ethic of respect for nature and revival of rural communities.
- Dignified life - innovating Buenvivir alternatives in the countryside and not copying urban models (Gudynas, 2016).
- Knowledge laboratories and landscape observatories creating spaces for reflection and experimentation with different traditions of knowledge while respecting diversity and a vision of the future.
- Offer alternatives for academic training in Andean agroecology to orientate new professionals towards the accompaniment of local initiatives.

- Inventory of practical solutions based on Andean traditions and cosmovision and an agroecological perspective for the benefit of nature and human beings.
- Pay special attention to the knowledge of rural Andean women, often expressed in Quechua or Aymara, as original proposals for local policies.
- Promote the dialogue of knowledge between knowledge systems, linking elders with scientists with the aim of re-enchanting life on the terraces (Salas, 2021).
- More "more grain, less straw": Establish channels of communication between all actors in order to implement action from the bottom up, without bureaucratic obstacles.

Proposed learning actions (Figure 9):

- Documentation of the terraced landscapes through inventories with photographs (see world collection). Learning to exist by collecting the experiences of the inhabitants of the terraces and mapping the wisdom of the terraces.
- Communicating the importance of the terraces to locals and outsiders (exhibitions, brochures, publications in newspapers and magazines).
- Information points on the terraces (exhibitions, information boards near the terraces, viewpoints with information boards, local museums).
- Training of intercultural facilitators enhancing Andean voices.
- Learning by playing and doing (local initiatives for adults and for children).
- Dry stone wall building school to maintain and restore the walls of the terraces.
- Terrace farming school based on the teachings of modern agro-ecology (Pimbert, 2021).
- Adding the subject of terraces (Andean farming systems) to the school curriculum in terraced landscape areas.
- Cooperative learning journey - fostering social learning processes strengthening the future of the commons.
- New ways of thinking - learning to be creative and disseminating it, forming networks and alliances - decolonising conventional concepts of commercial development.
- Terrace guides for tourists and locals, which reclaim the wisdom of elders and

incorporate innovative ideas.

- Promoting the inter-learning of terrace builders and terrace guardians.
- These proposals of the 4th World Congress (Ažman et al., 2020) and the lines of action of the Padova Manifesto (Alberti, 2016) are guiding us to propose and implement the National Terrace Project in Peru with an intercultural approach, dialogue of knowledge and participatory action research from the International Terrace Seminar in March 2023.

Figure 9. Conclusions from La Gomera on Learning (photo by Timmi Tillmann).

Bibliography

Agrorural (2021) *Andenes para la vida. Inventario y caracterización de andenes en los andes tropicales del Perú.* Cusco: CBC-Agrorural.

Alberti, F.; Dal Pozzo, A.; Murtas, D.; Salas, M.A.; Tillmann, T. (eds.) (2018) *Terraced landscapes: choosing the future. Proceedings of the Third World Meeting of ITLA.* Venice: Veneto Region.

Ažman, L.; Matteini, T.; Pimbert, M. (2020) *Key issues in terraced landscapes (TLs).* La Gomera: ITLA.

Canziani Amico, J. (2017) *Ciudad y territorio en los Andes: contribuciones a la historia del urbanismo prehispánico*. Lima: Fondo editorial PUCP.

ETC-Group (2017) *Who Will Feed Us? The Peasant Food Web vs. the Industrial Food Chain.* Val David, Canada: ETC.

Gudynas, E. (2016) Beyond varieties of development: disputes and alternatives. in *Third World Quarterly*, 37:4, 721–732, DOI: 10.1080/01436597.2015.1126504.

Izquierdo, J. (2019) *La ciudad agropolitana. La aldea cosmopolita* Oviedo: KRK Ediciones.

Kolmans, E. (2021) *Agroecología, andenes y agrobiodiversidad*. Manuscript. Cusco: CBC.

Kothari, A.; Salleh, A.; Escobar, A.; Demaria, F.; Acosta, A. (2019) *Pluriverse. A post-development dictionary*. New Delhi: Tulika Books.

Massón, L. (1993) *Contribución al conocimiento de los andenes*. Arequipa Sepia V.

Murra, J. (2020) *Reciprocity and Redistribution in Andean Civilizations. The 1969 Lewis Henry Morgan Lectures.* Chicago: HAU Books.

Pimbert, M.P.; Moeller, N.I.; Singh, J.; Anderson, C.R. (2021) Agroecology. In *Oxford Research Encyclopedia of Anthropology.* Oxford: Oxford University Press. https://doi.org/10.1093/acrefore/9780190854584.013.298.

Pulgar Vidal, J. (1981) *Geografía del Perú. Las ocho regiones naturales del Perú*. 8th edition. Lima: Editorial Universo.

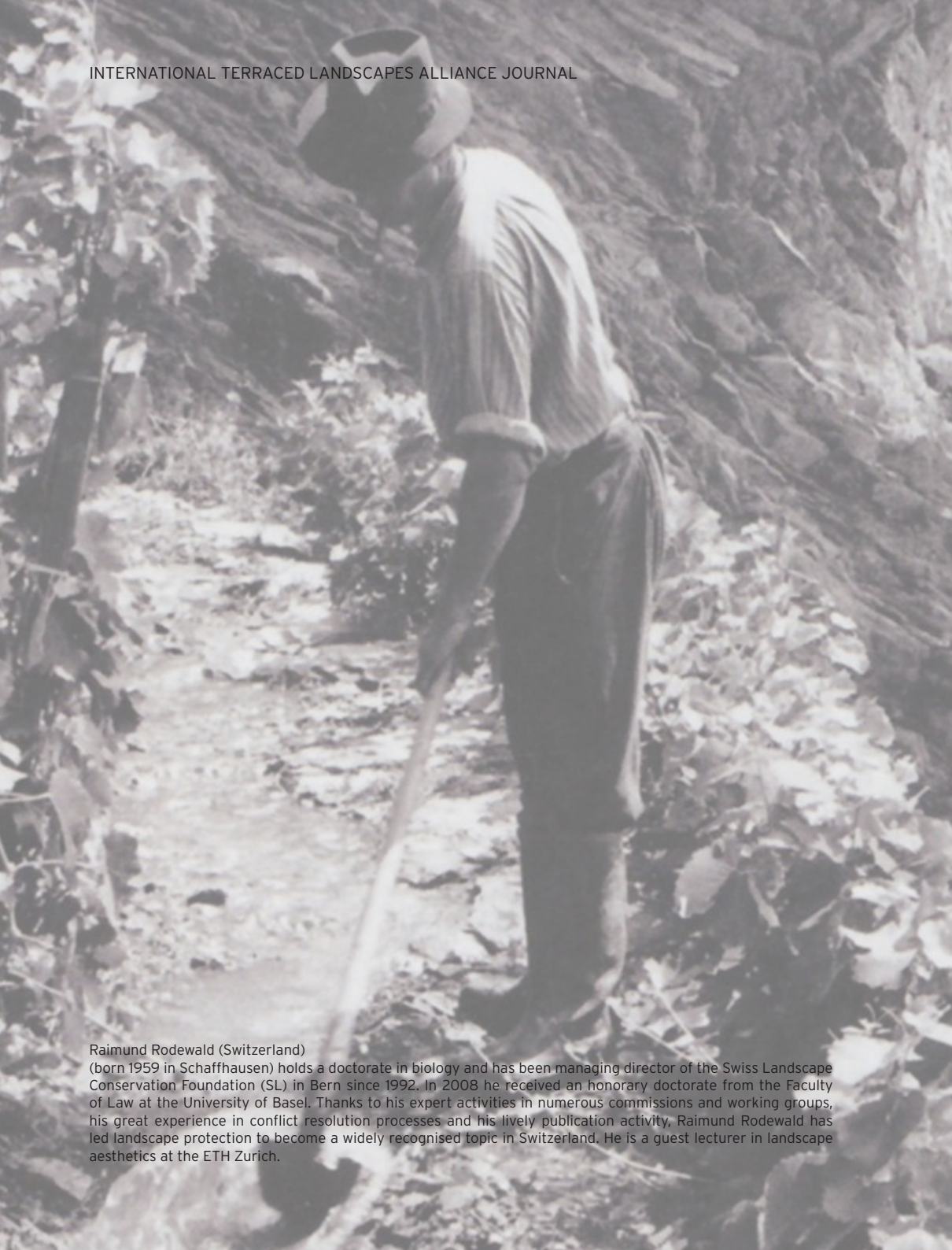
Salas, M.; Tillmann, T. (2021) *Conversando nos entendemos. Manual - Métodos de la Investigación Acción Participativa para transformar y reencantar la realidad*. Cusco: ITLA - CBC.

Tillmann, T. (1997) *Las estrellas no mienten: agricultura y ecología subjetiva andina en Jauja, Perú.* Quito: Abyayala.

Tillmann, T.; Bueno de Mesquitá, M. (2015*) II Congreso Internacional de Terrazas. Encuentro de culturas y saberes de Terrazas del mundo*. Cusco: CBC-JICA.

Tillmann, T.; Novo, J.; Epiquién, M. (2020) Inventories of terraced landscapes in Perú, *The Journal of Terraced Landscapes,* V 1, N 1.

Treacy, J. M. (1989) *Agricultural Terraces in Peru's Colca Valley: Promises and Problems of an Ancient Technology.* London: Routledge.



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Traditional irrigation: Candidature for Intangible Cultural Heritage of Humanity

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ABSTRACT

After dry stone walls, another infrastructure of terraced landscapes is in the focus of UNESCO: "Traditional Irrigation in Europe - Knowledge, Technique and Organisation" is the title of the current submission of 7 countries from March 2022 for the attention of the Representative List of the Intangible Cultural Heritage of Humanity. The UNESCO Committee had already inscribed "Art of dry-stone walling, knowledge and techniques" on the Representative List of the Intangible Cultural Heritage of Humanity on 28 November 2018.

KEYWORDS

traditional irrigation, UNESCO, intangible cultural heritage, terraced landscapes

Introduction

On 30 March 2022, the application "Traditional Irrigation in Europe: Knowledge, Technique and Organization" was submitted to UNESCO for inclusion in the "Representative List of the Intangible Cultural Heritage of Humanity". Austria took the lead in preparing the application together with Belgium, Germany, Italy, Luxembourg, the Netherlands and Switzerland. UNESCO will evaluate the candidature in a procedure lasting several months. A result on the inclusion is expected in December 2023. In Switzerland, the Wässermatten Oberaargau and the slope irrigation landscape of the Sonnenberge in the Upper Valais as well as five other water cooperatives in the Valais are involved. Some of these Suonen are also used today to irrigate vine terraces, however mostly in a technically modified way.

Traditional irrigation is a type of agricultural irrigation that relies on gravity and manually constructed structures such as canals and ditches to conduct water to the meadows, vines or gardens. Specific sets of rules and communal forms of organisation exist for watering. Switzerland was the inspiration for the idea of a European candidature of traditional irrigation for the Intangible Cultural Heritage of Humanity. A programme advisory board led by Prof. Christian Leibundgut and the Swiss Foundation for Landscape Conservation (SL-FP) had been preparing this candidature since 2013. The aim is to make the knowledge, cultural significance and social practices associated with irrigation visible internationally as well. The typical cooperative organisation around irrigation, the preservation and transfer of knowledge and the associated techniques can only take place with the cooperation of all those involved. Above all, international exchange and the cooperation that goes with it are important strategies for contributing to the preservation of this intangible cultural heritage.

Traditional irrigation - a thousand-year-old tradition in Europe that is now under threat

Today, traditional irrigation, as the lowland irrigation or hillside irrigation, is threatened with abandonment. In many places, technical irrigation systems have caused the disappearance of the tradition of irrigation of meadows, vines and gardens. Nevertheless, great efforts are

visible internationally to preserve or reactivate this culture, which is up to a thousand years old. Climate adaptation and biodiversity promotion, but also social integration are new important functions of traditional irrigation techniques. In Switzerland, rescue operations for traditional irrigation have been successfully carried out since 1970 in the 108 ha large Wässermatten in Oberaargau and since the mid-1980s in Valais. Today, around 160 people are concretely involved in irrigation in the Oberaargau, and on the Upper Valais (Sonnenberge) there are several hundred people in the municipalities of Ausserberg and Baltschieder, as well as in the approximately 30 water cooperatives in the municipality of Naters. In addition, there are five other cooperatives listed in the UNESCO candidature: the Suone Eggeri in Grächen, the Grand Bisse de Lens, the Grand Bisse d'Ayent, the Bisse du Trient and the Bisse Vieux de Nendaz.

Intangible cultural heritage and UNESCO - protecting and documenting regional traditions and local knowledge

In addition to the UNESCO World Heritage Convention, the Convention for the Safeguarding of the Intangible Cultural Heritage was launched by UNESCO in 2003. This placed the focus on people's traditional knowledge and their use of local resources and conditions, and gave international attention to the diverse living traditions. Traditional irrigation as a millennium-old knowledge makes an important contribution to sustainable development and the management of regional resources and promotes cohesion within the community. For example, through its contribution to groundwater accumulation, the practice helps mitigate flood risks, as well as the impacts of climate change at the local level (SDG 13 Climate Change Mitigation). The canals associated with irrigation (Waale, Suonen, Bisses) also contribute positively to the conservation and enhancement of local biodiversity (SDG 15 Life on Land).

Traditional irrigation is still a cooperative, sustainable, energy-independent and biodiversity-oriented solution for water supply in agriculture. It is of great importance for the practitioners themselves as well as for the wider society and the environment.

The important local significance attributed to traditional irrigation has already been

recognised by the inscription of the practice on the "National Lists of Intangible Cultural Heritage" in all seven countries involved. Now, a joint effort is being made to add this tradition to the international list in order to make this important element visible on a broader scale. The Intergovernmental Committee of the Conference of the Parties meets once a year and is expected to vote on the inclusion of Traditional Irrigation in Europe at its 18th session in December 2023.

Spectacular water worlds around the vine terraces of the Valais

Agricultural use on slopes in the semi-arid regions of the inner and Rhaetian Alps, in the Valais, in parts of Ticino and Grisons, such as in the Val Müstair and the Engadine, basically requires two things: firstly, soil, and secondly, water, whereby the latter was needed less for the rather undemanding cultivation of crop and more for gardens, meadows and pastures. Just as the soil had to be brought in for the terracing of the fields, or at least brought up again after alluvial deposits, the water also had to be brought in via artificially

Figure 1. Bisse de Clavau are still used today to irrigate vines on the terraced landscapes of central Valais.

constructed channels. These channels, called Suonen, Wasserleiten or Bisses in the Valais, were also poetically called "holy waters" because of their vital function - based on Jakob Christoph Heer's novel "An heiligen Wassern" (1898).

Since there was a lack of water on the sunny, primarily south-facing slopes due to the lack of springs, it was diverted from the glacial streams by means of an ingenious canal system and transported in open, often kilometer-long channels and ditches at an equal gradient to the villages and meadows. There it could be used according to certain rules. The water rights were recorded in documents, which today are among the oldest written documents of many Valais communities. As a rule, construction and maintenance were the responsibility of private cooperative bodies made up of families who depended on the irrigation and also negotiated the maintenance obligations among themselves. The strictly regulated water rights assigned specific watering times to each user and were ordered in a "Wasserkehr" (the rotation of irrigation). The maintenance of the water channels

Figure 2. Bisse de Lentine (near Sion) are still used today to irrigate vines on the terraced landscapes of central Valais.

Figure 3. Ancient vine irrigation (©Collection Musée valaisanne de la Vigne et du Vin).

was assigned to selected individuals. The water channels are therefore part of an ancient anthropogenic landscape design. Written testimonies from the Valais become frequent since the 13th century. They form water worlds in the midst of dry mountain slopes that are historical but still relevant today and will become more important again in the future due to climate change.

Several impressive water channels supplied the terraced vineyards around Sion. They diverted water from the Liène valley (Bisse de Clavau, dating from around 1450 (Figure 1)) or from the Sionne valley (Bisse de Lentine, built in 1862 (Figure 2)). The vineyards around Sierre also had to be irrigated with water channels. Victor Pulliat mentions the saying: "Pas de Bis, pas de vigne" (No Bisse, no vine) in 1885. The water there was channelled over the broken schist ("brisées") that covered the vineyard floor. Thanks to

the schist, which is rich in potassium and phosphate, this also caused a certain natural fertilisation. Even today, a few winegrowers still practice this traditional vine irrigation out of conviction.

With the introduction of technical sprinkler systems in 1930 and the corresponding state subsidies, the traditional practice of irrigating vines and meadows (Figure 3) gradually disappeared. Many exposed cannels that could only be maintained with great effort were laid in tunnels, enclosed in concrete shells or completely piped. The irrigation systems with hydrants and pumping systems still often use the water from the Suonen. In the vineyards in particular, they were often equipped with ugly concrete installations, pressure pipelines and all kinds of tubes. The former charm of the water channels has completely put aside. Thus wrote Walter Schmid in 1955: "Many of the conduits have lost their romance in recent years because, in the course of their modernisation, the engineers have replaced the wildest passages on the rock walls with tunnel constructions and the wooden cannels with bare cement pipes. The old Suonen are increasingly going this way, and on this occasion one cannot avoid the question of whether one day, when technology has modernised the picturesque old installations step by step with the sobriety proper to our time, a voice might not be raised in the federal lands that feels obliged to demand the protection of the old-venerable 'Bisses' that require much work, effort and care" (Walter Schmid 1955. Komm mit mir ins Wallis, Bern). This voice has now become loud.

Louis Courthion had already pointed out the tourist value of the Suonen in 1920. Numerous books and the artistically outstanding photographic documentation of the folklore culture and landscapes of the Valais from the end of the 19th century contributed to raising awareness. Films also were important, like "An heiligen Wassern" (1960) and "Wasserwosser - Die Waale", a film from the Vinschgau Valley at the beginning of the 1980s.

Since that time, there has been a real rediscovery of the Valais' channels. In 1982, the organisation Switzerland Tourism proclaimed the "Year of the Suonen/Bisses" for the Valais. When a hydroelectric power plant was planned for the Baltschiederbach, the fate

of the five remaining Suonen in the valley seemed sealed. With a protection agreement between the Swiss Foundation for Landscape Conservation (SL-FP) and the four valley municipalities, the end of the centuries-old irrigation system was prevented in 1986.

Although today there are federal and cantonal subsidies for the maintenance of the open water channels and their paths, these are often not enough, so that institutions such as the SL-FP and the Swiss Landscape Fund have to help. Thanks to them, numerous restoration projects could be realised. Various publications and tourist writings promoted public awareness. In 2010, a candidacy for UNESCO was discussed for the first time at an international colloquium on the water channels in Sion. In 2022, the candidacy has now been submitted with hopefully a positive outcome. In september 2022 an international center for traditional irrigation has been opened in St. Urban/Switzerland to encourage knowledge exchange and networking.

The open water channels and the traditional irrigation with their centuries-old history are also indispensable for tourism, climate protection and biodiversity in the future. For the maintenance of the terraced landscapes, they will certainly gain more importance in the future.

Further information:
https://ich.unesco.org/
https://www.sl-fp.ch/de/stiftung-landschaftsschutz-schweiz/aktuelles/traditionelle-bewaesserung-in-europa-n-unesco-kandidatur-341.html

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