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To cite this article: Leila Chakroun & Laÿna Droz (2020) Sustainability through landscapes: natural parks, satoyama, and permaculture in Japan, *Ecosystems and People*, 16:1, 369-383, DOI: [10.1080/26395916.2020.1837244](https://doi.org/10.1080/26395916.2020.1837244)

To link to this article: <https://doi.org/10.1080/26395916.2020.1837244>



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Published online: 02 Nov 2020.



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## Sustainability through landscapes: natural parks, satoyama, and permaculture in Japan

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### ABSTRACT

Approaching sustainability through landscapes helps appreciate the value of the diversity of human ways to live with nature that exists today. On the basis of fieldwork research in Japan, we explore the landscapes of natural parks, satoyama, and permaculture, all three recognized as sustainable and of high biodiversity value despite showing significant differences in terms of nature protection and landscape management strategies. We use the ‘framework of the milieu’ inspired by Watsuji Tetsurō and Augustin Berque to situate individual experiences and behaviours within the landscape’s dynamics. It sheds light on the ideas of human-nature relations that underpin the understandings of sustainability as reflected in each landscape. We derive three corresponding landscape types: scenic, cultural, and ecotopian landscapes. We show that these types can be complementary insofar as they together support healthy ecosystems and fuel a sense of connectedness to nature.

### ARTICLE HISTORY

Received 30 December 2019  
Accepted 9 October 2020

### EDITED BY

Jacqueline Loos

### KEYWORDS

Environmental philosophy; human-nature connectedness; individual experience; Japan; landscape; milieu; sustainability

## 1. Introduction

Sustainability encompasses different realities and refers to a multiplicity of values, beliefs, and ideas of human relations with nature. Approaching sustainability through landscapes could help situate it within the ecological and sociocultural local contexts and facilitate its implementation. The perspective of landscape sustainability offers a place-based, relational thinking of human-nature interactions (Hanssen 2001; MacKenzie 2004; Berque 2013; Wu 2013; Stenseke 2018; West et al. 2018; Bieling et al. 2020). Many studies that adopted this perspective propose landscapes as entry points to leverage sustainability transformation from place-based instances of sustainable human-nature relations (Gu and Subramanian 2014; Uehara et al. 2019; Riechers et al. 2020a, 2020b). Among these, Riechers et al. (2020a) show how human-nature relations play a critical role in the evolution of landscape and their sustainable landscape management. Inversely, reviving a sense of connectedness might contribute to maintain the diversity and complexity of landscapes (Riechers et al. 2020b). This sense of connectedness is also at the core of the study of Uehara et al. (2019), which suggests that Japan’s cultural seascape of *satoumi* could serve as a place to enhance people’s relations to nature, engender relational values, and in return maintain the seascape biodiversity. Gu and Subramanian (2014) adopt the term of ‘socio-ecological production landscapes’ to refer more broadly to cultural landscapes shaped by

mutually beneficial relations between human and nature. The authors suggest that considering local communities, their customary values and traditional knowledge could contribute to sustainable landscape management.

In this paper, we draw on these studies and explore the three landscapes of natural parks, satoyama, and permaculture, which are all recognized as sustainable and of high biodiversity value, despite showing significant differences in terms of nature protection and landscape management strategies. We embed our reflection in the context of contemporary Japan, which presents a startling combination of ways of connecting with nature.

We analyse the distinct understandings of human-nature relations underlying each landscape on the basis of four sets of semi-structured interviews (52 in total) and ethnographic observations conducted between 2014 and 2019 with a selection of spokespeople for each landscape. We use the ‘framework of the milieu’ inspired by the Japanese philosopher Watsuji Tetsurō and the French geographer Augustin Berque to clarify the relations between landscapes, individuals, and sustainability. We highlight how these landscapes lead to specific individual embodied experiences, encourage different practices and behaviours, and gradually shape diverse socio-ecological systems throughout intergenerational historical processes.

## 2. Conceptual background

### 2.1. Sustainability and the framework of the milieu

Humans do not live and experience their environment as objectified and neutral, but as webs of meanings, values, and affordances (Gibson 1979). In order to capture this concrete relation between humans and nature, Watsuji (2007; 2011) developed the idea of milieu (*fūdo*). According to him, we cannot abstract ourselves from the milieu, nor can the milieu be detached from the human standpoint, as humans continuously evolve with it, and shape it through mutual relations (Droz 2018). He insists that far from being a given, the milieu humans inhabit is the result of the relation with their environment over generations. The milieu is the matrix that nurtures human communities, shaping their cultures and their ways of living, *and* the imprint that is shaped by the historical relations of humans with each other and with their environment (Berque 2000, 2015; Droz 2019a).

A few studies used the idea of milieu to speak about the concrete relations between human beings and the environment (Kamada 2016) and between nature and culture (Prominski 2014) underlying landscapes. To approach real-life environmental issues from the individual perspective, we detail by means of the ‘framework of the milieu’ how the realm of individual agency is interwoven with the realm of social and natural processes. The framework of the milieu clarifies the dynamic relations that bind together the individuals, the community (or society), and the milieu as matrix and imprint (Droz 2020a). It describes a cyclic process that includes four interconnected steps (Figure 1): First, human communities shape and change their milieus through the collective imprints that result from constant interactions and negotiations between human agents and with the non-human world. As milieus are interconnected, some socio-ecological consequences of these imprints span globally, such as climate change. Second, these

historical and intergenerational processes unfold through time and result in the milieu as a matrix. Third, this matrix in turn informs, guides and constrains experiences, ways of thinking and the potential practices of individual agents. Nevertheless, individual human beings retain their agency and capacity to think, to make decisions informed by their ethical values, and to take actions. In other words, they can assess the practices, values, and meanings made available by the milieu as matrix, and choose to adopt or resist them. Fourth, by adopting particular behaviours and ways of life, individual agents shape the milieu as imprint.

Milieus are built through dynamic and interdependent human-nature relations. By interacting with each other and living in a particular milieu, humans gradually shape ecosystems, while building norms about how to properly use and appreciate them. Every milieu is characterized by different systems of values and ways of life from which individuals can innovate and design locally and culturally appropriate more sustainable ways of life. Sustainability is here understood as the possibility of continuation of the matrix-imprint dynamics of the milieu (Droz 2019b) and hence represents a direction towards which landscapes could and should be shaped. In other words, we understand sustainability not only as environmental protection, but as encompassing practices, beliefs, and values that guide people to live in ways that can be continued because they enable the maintenance and perpetuation of their milieu.

### 2.2. Landscapes within the framework of the milieu

We understand landscapes as concrete instances of the dynamics of milieus, being shaped by human and non-human agencies, and, in return, structuring the interactions we have within them (Croch 2010; Berque 2013; Tsing 2015). As such, they are dynamic adaptive systems shaped by complex societal and ecological relations. They reflect how particular cultural meanings and

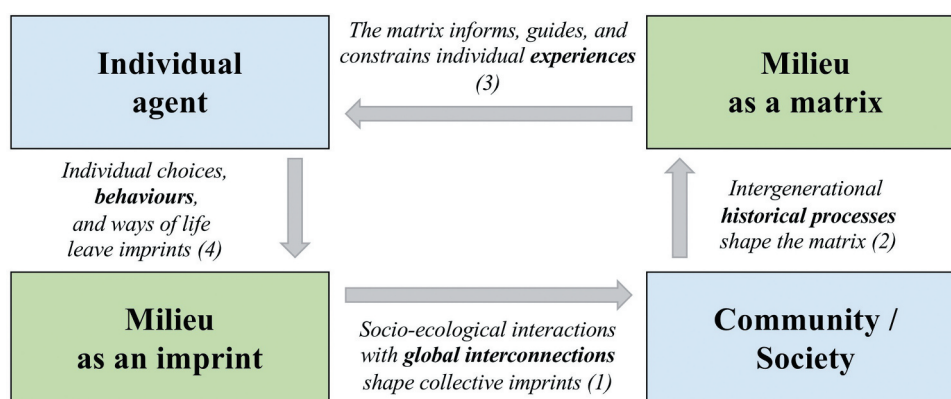


Figure 1. The conceptual framework of the milieu.

values lead to different usages of the space and of environment. Applying the framework of the milieu to landscapes highlights the dynamics that lead to the emergence of particular landscapes (the blue outer part of Figure 2). First, the preservation and transformation of a landscape result from negotiations and disputes between diverse stakeholders and the milieu. Second, through multiple intergenerational and multi-species interactions, communities and societies build a normative sociocultural frame that defines what is considered as a landscape, what experience is valued and what behaviours to adopt towards it. Third, individuals, guided by this particular sociocultural frame, may then choose to conform to or challenge the norms, values and practices inscribed in the landscape. Fourth, by doing so, they conjointly imprint the landscape and contribute to continuously shaping the milieu as both imprint and matrix. Through their practices they partake in the negotiations that concretely model the landscape, which is the first point mentioned in this non-chronological cyclic process.

The framework of the milieu rejects the abstract separation between processes that are often considered to be ‘internal’, such as ethical decision-making, and processes that appear as ‘external’, such as environmental degradations. Applied to landscapes, this perspective contrasts with recent studies on landscapes and social-ecological systems (Palomo et al. 2014; Hanspach et al. 2016) that tend to give only limited consideration for the internal state of the individuals (Manfredo et al. 2014). Yet, people’s inner worlds are an essential dimension to consider for sustainability (Balázsi et al. 2019; Ives et al. 2020; Riechers et al. 2020a), as ‘it is only at the scale of our direct, sensory interactions with the land around us that we can appropriately notice and respond to the immediate needs of the living world’ (Abram 1997, p. 268). Indeed, our beliefs and values about nature influence our experience and encourage behaviours that lead to more or less sustainable consequences such as environmental degradation or ecosystem rehabilitation.

The framework of the milieu thus places the pivot of sustainable changes on the individual level. In this perspective, the idea of human-nature connectedness – a state of consciousness that reflects ‘a realization of the interrelatedness between one’s self and the rest of nature’ (Zylstra et al. 2014, p. 119) – emerged as a leverage point for sustainability insofar as it is correlated with pro-environmental behaviour (Hoot and Friedman 2011) and human well-being (Cervinka et al. 2012). By addressing the phenomenological standpoints of the individuals who experience and shape landscapes, the framework of the milieu helps to integrate individual experiences such as human-nature connectedness within the greater context of the socio-ecological dynamics of the landscape. Thus, it enables a clear connection between an individual’s ethical values and decision-making, and the consequences of a particular way of life on the environment (Hanssen 2001).

In this view, landscapes allow us to bridge abstract concepts such as ‘milieu’ and ‘sustainability’ and apply them to concrete localized realities. This has two implications. First, it means that we can use landscapes as reflecting the views of nature held by the people involved in it. By analysing concrete landscapes and the socio-ecological dynamics that sustain them, we can unearth the normative assumptions that people hold regarding their relation to nature. In line with our definition of sustainability, we could speak of unsustainable landscapes when these landscapes crystallize practices that cannot be pursued in the long term, because – but not only – they deplete the environment irreversibly.

Second, it means that we can use landscapes to influence people’s behaviours as well as their beliefs and values of nature. Indeed, experiencing and living in particular landscapes can influence behaviours and worldviews. Various studies in the field of environmental psychology have shown that certain nature-based experiences lead to the adoption of adjusted attitudes and behaviours towards nature (Pyle 2003; Nisbet et al. 2009; Kamada 2016). Consequently, we

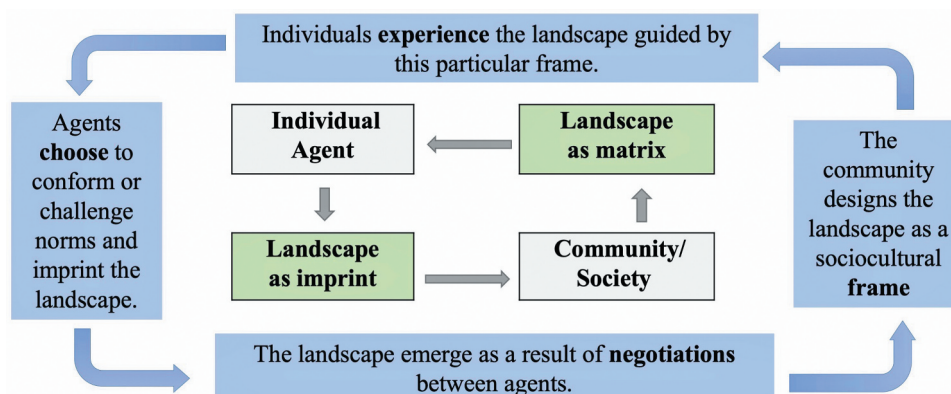


Figure 2. The landscape dynamics based on the conceptual framework of the milieu.

could see landscapes as matrices that influence people towards more sustainable ways of life.

### 3. Methodology

#### 3.1. Background and study area

This article results from of an interdisciplinary collaboration between two researchers, both working on sustainability in the context of Japan, one from the prism of environmental philosophy and the other from environmental anthropology. This collaboration aims at bridging philosophical reflections on human-nature relations and sustainability to the diverse realities of local and sociocultural contexts. Typologies of human-nature relations and their respective landscape approaches remain scarce within the Japanese context (Flint et al. 2013), even though many researchers describe the ambivalence of Japanese culture towards nature (e.g., Pons 1993; Berque 1997; Hendry 1997; Santos Alexandre 2019), such as a tension between veneration and destruction (Knight 2004).

This tension is reflected in Japan today, in the form of a profound social transition caused by the joint economic stagnation and ecological crisis. Japan is notorious for its ongoing depopulation trend – mostly affecting the mountainous and rural areas, as many people are gathered in a few metropolises. While reinforcing the urban-rural divide and the subsequent inequalities (Chiavacci and Hommerich 2017), it also creates challenges and opportunities for sustainability. For instance, agrobiodiversity drops, as fewer people live in the countryside and engage in land activities. Yet, the vacancy of rural lands has enabled a discreet ‘back-to-the-land’ movement of mostly young people sensitive to the ecological situation, leaving big cities to experience farming lifestyle (McGreevy 2012), or to experiment more radical and innovative ways of farming and ecological living (Chakroun 2019). Politically supported by some Prefectures, these trends contribute to the revitalization of local communities and the rehabilitation of their surrounding landscapes (Osamu 2014). Hence, while Japan’s rural landscapes are at the core of an ongoing socio-ecological transition, there is a growing recognition that their cultural and ecological values could be important assets for sustainability (Watanabe et al. 2012).

#### 3.2. Data collection

In this article, we examine three landscapes from a unique perspective: that of the individual agents who participate in the making and maintenance of landscapes. We conducted semi-structured interviews and participatory observation with the

main spokespeople and actors managing one – or more – of the three landscapes. This methodological choice enables us to reveal the people and processes necessary for those landscapes to exist, and to highlight for each the role of individuals and the influence of culturally-embedded worldviews.

Regarding data collection, the interviewees were selected on the basis of their role(s) in the Japanese natural parks and/or satoyama and/or permaculture. For national parks, we conducted 27 interviews and a three-month observation from June to September 2014. We selected the professionals working for natural parks and nature conservation, doing either legislative, administrative, or management work. Many of the people interviewed for natural parks were conjointly in charge of biodiversity in satoyama areas, which allowed us to collect data simultaneously. The three main information sources – the Ministry of the Environment of Japan (MoE), the Natural Park Foundation (NPF), and the Nature Conservation Society of Japan (NACS-J) – were identified thanks to online activity reports on Japan’s national parks. We interviewed four people from the MoE, three people from the NPF and two people from the NACS-J. They referred us to regional managers, park rangers, and local NPOs. For permaculture and further data on satoyama, we organized fieldwork in three phases; from June to August 2017, from October to November 2018 and from February to September 2019. As permaculture projects tend to develop in satoyama areas, several informants wore two hats. 25 people were interviewed for permaculture and satoyama combined. For permaculture, the main informants were identified by contacting the founders of the three main permaculture schools: Permaculture Center Japan (PCCJ), Permaculture Awa, and Permaculture Center Kamimomi. They redirected us towards other important permaculture practitioners and projects throughout the country, such as permaculture teachers, farmers, heads of NPOs and associations for the promotion of permaculture. For satoyama, we conducted an interview with a staff member of the United Nations University’s Institute for the Advanced Study of Sustainability (UNU-IAS). The UNU-IAS is a founding member of the Satoyama Initiative. We also interviewed the founder and a few members of Satoken, the ‘Satoyama Institute for Economic and Environmental Research’, acting for the revival of satoyama landscapes. As for the observation part, we volunteered in farms and permaculture projects located in satoyama areas. We complemented those data with grey literature such as government documents, promotional brochures, and information pamphlets for the three selected landscapes.

### 3.3. Data analysis

We developed an analytical framework to analyse and interpret the collected data in relation to our lines of research. We made use of ATLAS.ti (Version 8.4.4) software for qualitative data analysis to facilitate the content analysis (Mayring 2000). The analytical framework includes nine themes classified in three broad groups:

- (1) Personal relation with nature and with the landscape they work for
  1. Personal relation to and representation of nature
  2. Perception of their own role in nature and in the landscape
  3. Significant memories in nature
- (2) Role assigned to humans in the landscape
  1. Perceived necessity of people's presence in the landscape
  2. Mode and degree of intervention deemed desirable
  3. Role(s) of the landscape for the society
- (3) Place given to nature in the landscape
  1. Type of nature considered as worth protecting
  2. Nature management strategies
  3. Interactions between the landscape and the surrounding areas

We explore the results of the data analysis by means of the conceptual framework of the milieu.

## 4. Three landscapes in Japan

Natural parks, satoyama, and permaculture coexist nowadays in Japan. We analyse these three landscapes as the results of culturally-embedded, multi-generational and multi-species interactions between humans and nature. We highlight how they bear the

imprints of past socio-environmental challenges and reflect particular ideas regarding the relation that humans have – and should have – with nature. Drawing upon the results of the semi-structured interviews and participatory observation, we show how each landscape conveys a distinct understanding of what are sustainable human-nature relations.

### 4.1. Natural parks

Natural parks are characterized by the beauty of their natural sceneries (Figure 3). They cover about 14% of Japan's territory (53,000 km<sup>2</sup>, MoE 2014). The first twelve parks in Japan were established in 1934, in reaction to the undesirable consequences of the post-Meiji modernization process: the wide-ranging destruction of Japan's natural environment and the gradual disappearance of traditional landscapes. This prompted the government to adopt Western instruments of environmental protection (Berque 1997) such as natural parks. Long negotiations then began, to find a consensual way of adjusting the American idea of 'parks for nature' to the Japanese context (Havens 2011). A great part of the Japanese territory was and still is privately owned, which challenges the idea of *public* natural parks and park management. Besides, no Japanese linguistic nor cultural equivalent existed to the concept of *wilderness* (Interview with NPF, July 2014). Japan has a long history of human settlements and only outermost areas such as small islands and mountains were considered wild and beautiful enough to be consistent with the American idea of wilderness. These areas actually happen to be left almost 'untouched' because both the high mountains and the deep seas were since ancient times venerated as the dwelling places of the gods (*kami*) in Shintoism (Berque 1997; Rots 2015). In fact, before the introduction of natural parks, the sacredness of landscapes and the sense of awe they fuel in local people



**Figure 3.** Experiencing the scenic mountainous landscape of Daisetsuzan National Park (Hokkaido, Japan, 2017). Credits: © Nagatomo Taiki (tn911927.jimdofree.com). {Used with permission. Reuse not permitted}.

regulated their preservation and utilization (Kondo 1991). One of the first parks established aimed at preventing the degradation of the natural landscapes surrounding the Itsukushima shrine, on the sacred Island of Miyajima (NACS-J, August 2014). The representative of the Nature Conservation Bureau in MoE (Interview, August 2014) tells: ‘Mountains were dreadful places for Japanese people, causing fear, because people think gods live there. I think gods reside in mountains, but not everywhere, only in extraordinary sceneries’. However, whereas Shintoism has a dynamic and fluctuating conception of the limits between the ‘land of humans’ and the ‘land of gods’ (Berque 1997), natural parks have enforced, for the sake of nature conservation, a much less porous frontier.

This has fuelled a still-ongoing debate opposing those in favour of stricter regulations of human activity to those concerned with the consequences on the local inhabitants. The Japanese institutions in charge of natural parks had to consider these particularities and introduced different zoning categories to modulate the severity of the regulations and hence to better conciliate nature conservation with the livelihood activities of the local inhabitants (Hiwasaki 2005). Only in the ‘Special Protection Zone’ are stretches of lands left untouched for nature to ‘exist with its own beauty, unchanged from the way it was born’ (NACS-J, August 2014). Still this zone represents only a minor part of the total surface covered by natural parks. In the other zones, human presence is appreciated, or at least well tolerated, as the combined presence of local inhabitants and visitors contemplating landscapes was the primary objective of Japan’s natural parks (Hiwasaki 2005; Havens 2011). The Japan’s Natural Park System was indeed largely driven by the political will to preserve culturally significant sceneries (NACS-J, August 2014).

In that sense, Japanese natural parks serve as means to revive ‘Japanese nature’, meaning not only the conservation of indigenous ecosystems and endangered species, but also the revaluation of Japan’s traditional sense of nature (Senda 1999; Hayashi 2002; Chakroun 2015). The loss of biodiversity and the concomitant degradation of scenic landscapes are indeed claimed to stem from the weakening of human connection and sensibility to nature: ‘We have traditional good attitudes to nature, especially the old Japanese people. In the past, we had a good relationship with nature, close to coexistence. Even though we need this attitude now, we cannot see it these days’ (NACS-J, August 2014). The Head of a Visitor Centre of Daisetsuzan National Park equally bemoaned the fact that ‘Japanese people are so used to have nature around that they take it for granted. They are de-sensitised and sometimes don’t realize that part of nature has been lost, because there is so much nature remaining, still’ (Interview, September 2014).

This has caught the organisations in charge in a double bind of preserving the naturality of the landscapes while encouraging tourism to stimulate their cultural appreciation. The tension seems to be resolved through the intense but highly structured aesthetic experiences those landscapes provide to the daily visitors. The pamphlets created by the MoE and the NPF extol the beauty of the parks throughout the four seasons by means of photographs and poetry, hence inviting visitors to appreciate the landscapes through these specific lenses and to behave accordingly. Visitor centres, signs, and monitoring by park rangers prescribe restrained behaviours, such as staying on the clearly defined hiking paths and refraining from picking up plants and mushrooms, so that future generations can also experience the beauty of those landscapes ‘with the same sense of wonder and joy as our generation’ (MoE n.d.). Thanks to those constraints, Japan’s natural parks paradoxically offer both a rewilding experience *and* the feeling of an intimate belonging to nature. Several interviewees (such as MoE, NPF, NACS-J, July–August 2014) echo this view: They describe the landscapes of natural parks as a source of *iyashi* – a Japanese concept for ‘solace’ or ‘comfort’ – and claim that this feeling could eventually lead them to develop an aptitude not only to appreciate extraordinary landscapes but also to care for the local, ordinary nature they encounter in everyday life.

#### 4.2. Satoyama

Satoyama originally designates community-based landscapes consisting of upland villages and their adjacent forests cultivated for subsistence (Figure 4). Depending on the way satoyama is defined, satoyama areas are estimated to cover between 18% and 67% of Japan’s national land (Jiao et al. 2019). The concept of dates back to the Edo period (1603–1868) and was revived in the 1960s by a forest ecologist – at the exact time when these landscapes and their unique biodiversity were on the verge of disappearing as a result of Japan’s industrial growth, suburban development, intensive deforestation and rural exodus (Tsing 2015). It now refers more broadly to biocultural mosaics of diverse ecosystems, intimately interconnected with human dwelling, and ecologically integrated within the agricultural regime of terraced paddies through the circulation of water and other nutrients on the land (Dublin and Tanaka 2014). The water cycle connects uplands to the coastal landscapes. Therefore, the preservation of satoyama is claimed to not only sustain the biodiversity of woodlands, grasslands, and wetlands, but also to benefit river and marine habitats (Interview with Satoken Association, August 2019). This intertwining



**Figure 4.** Mosaic landscape of satoyama, integrating human habitat, agricultural fields and coppiced woodlands (Kanagawa, Japan, 2019). Credits: © Matthieu Zellweger / Haytham Pictures / (matthieuzellweger.com). {Used with permission. Reuse not permitted}.

and coevolution between ecosystems and people contribute to maintain a rich biota and a high natural habitat diversity. Satoyama are indeed habitats for rabbits, falcons, herons, ants, frogs, small fish, matsutake mushrooms and more than 350 plant species (Tabata 2001; Kuramoto and Sonoda 2003; Tsing 2015). Today, due to the gradual weakening of rural and coastal communities and the subsequent lack of regular care, those landscapes quickly transform and their peculiar biodiversity collapses (Interview with UNU-IAS, September 2019). An inhabitant of satoyama contents that ‘Forests have been preserved by the residents. So, we need to preserve a social system to enable such preservation, but it has been collapsing. If an old person dies, a forest dies’ (Interview, August 2017). Typically, bamboo forests quickly take over at the expense of the semiaquatic ecosystems created by rice paddies, or at the expense of other varieties of trees in adjacent forest ecosystems. Speaking about this issue, a wildlife expert claimed that ‘It’s important that people and nature are together. Leaving nature isn’t the best option, we need to take good care of it’ (Interview, July 2014).

In the context of the global environmental crisis, the Japanese culture of satoyama became considered as valuable guidance to inspire ways of living that would contribute to restoring wildlife habitat connectivity (Jiao et al. 2019). In 2007, the MoE hence defined Japan’s ‘Strategy for a Sustainable Society’, drawing upon satoyama traditional wisdom and know-how of community management and sustainable use of resources. The International Partnership for Satoyama Initiative (IPSI) was then created in 2010 to help revalue

worldwide instances of so-called ‘socio-ecological production landscapes and seascapes’. The latter include traditional land and coastal socio-ecosystems based on prolonged interactions between agrarian communities and the surrounding ecosystems on which they rely for subsistence (Duraiappah et al. 2012), such as *dusun*, the agroforestry system of Maluku farmers in Indonesia (Matinahoru 2014).

The IPSI also aimed at revaluing satoyama as an icon of the harmonious relations of the Japanese people to nature, and at promoting human-influenced landscapes that are of high biodiversity value (Takeuchi 2010; Dudley 2012). This idea is henceforth conjointly promoted by the IPSI, the Satoken Association, the UNU-IAS, and the MoE to encourage urban dwellers to experience the satoyama way of life and to perpetuate the Japanese culture of coexisting with nature (Interviews, August 2014, August and September 2019). By reviving satoyama landscapes, it is the very possibility of experiencing the deep and intimate link between culture and nature that is being preserved. When going or returning to satoyama landscapes, visitors might remember their childhood (Tabata 2001), and develop a nostalgic feeling of belonging to the land. Several interviewees accordingly relate satoyama to the nature of their childhood: ‘Satoyama is such a familiar image: fields, rice fields, and the mountains behind my family house ...’ (Head of an NPO for bird conservation, July, 2014). By means of this image of satoyama, the IPSI thus urges inhabitants and visitors to retrieve the traditional attitudes towards nature and to perpetuate a sentiment of intergenerational



responsibility towards the land, in order to sustain harmonious relations with the human and non-human community.

### 4.3. Permaculture

Permaculture concurrently designates a design concept towards sustainable agrifood system and the landscapes resulting from the design process (Figure 5). It was created in 1974 in Tasmania, by merging the words ‘permanent’ and ‘agriculture’. The originators, Bill Mollison and David Holmgren, were critical of the socio-ecological drawbacks of industrial agriculture, and proposed permaculture as a novel ethical stance towards nature inspired by the motto of the Japanese leader in natural farming (*shizennoho*) Fukuoka Masanobu: ‘working with nature, rather than against it’ (Mollison 1988). Permaculture is therefore rooted in an epistemology and farming methods radically differing from those of modern agronomy (Cohen 2017). Permaculture rapidly aroused a lot of interest internationally amongst ecologists, architects, and organic farmers. Japan’s first experimentations with the concept dates back to 1993, after two Japanese came back from a permaculture workshop given in Australia. Three years later, they created the very first permaculture school of the country: The Permaculture Center of Japan (PCCJ) (Interviews with the founders, July 2017 and April 2019). This school teaches basic agroecological knowledge and design technics and aims at conveying more sustainable ways of valuing and acting towards nature. The similarities with the traditional human-nature coexistence of satoyama landscapes and with the Japanese movement for natural farming have nourished the Japanese permaculture movement from its inception (Holmgren 2004). As a result, permaculture is understood simultaneously as a more ecological way of living, a natural way of farming, and a way to revive traditional wisdom and know-how.

Nowadays, Japan’s permaculture movement is garnering a growing number of followers and practitioners who seek to embody the underlying ethical ideas and design principles in their everyday lives and in their farming practices. The leaders estimate that, in Japan, about 10’000 people contribute to the movement, on a surface smaller than organic agriculture, which accounts for about 1% of Japan’s cultivated land (MAFF 2019). Permaculture designers wish the idea to further disseminate through a snowball effect: ‘If we manage to turn our small community into a sustainable place, the idea will spread to the whole world’ (Interview with the organiser of a permaculture event, November, 2018). The rural exodus has left an important quantity of abandoned farms and arable lands, thus offering opportunities for newcomers to settle and start their own permaculture project.



**Figure 5.** Permaculture design workshop for the creation of a river to optimize water management while creating linkages between natural habitats and ecosystems. Credits: Leila Chakroun (2019) {Used with permission. Reuse not permitted}.

Besides its objective to design sustainable agricultural sites, permaculture invites each individual to embody human interconnectedness with nature. Mollison describes permaculture as ‘an experiential system of design’ and underlines that to be a good designer means to ‘design by natural example, becoming aware [...] and becoming sensitive to the processes and sights about you’ (1988, p. 46). The founder of Japanese permaculture consistently explains that ‘If you design something that is separated from yourself, the design is not good. You should put yourself in the design. Before we design, we need to sharpen our senses first, then our feelings become messages from nature. By designing this way, we can build relationships that enrich people and nature together’ (Interview with the Head of PCCJ, July 2017). Permaculture landscapes not only contingently welcome biodiversity, but are intentionally designed to create favourable conditions for humans, snakes, insects, birds, soil microorganisms, and mycorrhizal fungi to thrive. To this end, Japan’s permaculture designers have recently created collaboration with NPOs for the revival of satoyama. Indeed, permaculture design can be applied in different contexts and, in Japan, it has favourably been used in

abandoned satoyama landscapes. However, some permaculture designers underlined that their desire for multispecies cohabitation is greater than in traditional satoyama (Interviews, July 2017 and November 2018). Encounters with non-humans are valued, even though some – like wild boars, snakes, and monkeys – might be more damaging or dangerous than others. In that sense, permaculture fosters sustainability through caring relations and behaviours among humans and towards non-human entities, based on ‘an ethics embedded in concrete mundane relationalities’ (Puig de la Bellacasa 2017, p. 127).

## 5. Ways of connecting to nature: Scenic, cultural and ecotopian landscapes

By analysing the landscapes of natural parks, satoyama, and permaculture with the framework of the milieu, we shed light on how the dynamic relations that support and create each landscape are underpinned by different ideas of sustainability, and how, in return, those ideas shape the evolution of those landscapes. We show that, while they are all regarded as high biodiversity landscapes, they each refer to a particular way of making sense of the milieu, hence encouraging different ways of connecting to, experiencing and valuing nature. In natural parks, individuals stand in front the landscape and are connected to nature through the admiration of beautiful ‘untouched’ sceneries. Satoyama connects individuals to nature through traditional knowledge and uses, and encourages them to actively perpetuate cultural patterns of coexistence. And, when designing permaculture gardens, individuals are deeply self-aware of their intimate connection to the multiple other species populating nature through their embodied experience. They experiment their ideal vision of a multispecies world through the careful design of landscape.

We derived three landscape types on the basis of the place and role that individuals take in their relation to the landscape: scenic landscapes from natural parks, cultural landscapes from satoyama, and ecotopian landscapes from permaculture. Ultimately, we propose to see these landscape types as matrices for transformation towards sustainability, as they may lead the people engaged in the making of landscapes to adopt ways of life and enact policies in accordance with their underpinning ideas of sustainable human-nature relations.

### 5.1. Scenic landscapes

Natural parks reflect an idea of human-nature relations according to which, as stated by an interviewee, nature ‘exists with its own beauty, unchanged from the way it was born’. The admiration of the scenery is

central in such landscapes. Scenic landscapes are bound to a sociocultural frame of aesthetic protectionism, that is, the idea that the environment should be protected for the sake of its *natural* beauty (Godlovitch 1994; Hettinger 2005). Nature is valued in its alterity, even superiority, because it confronts mortal human individuals to a seemingly timeless landscape. Thus, the value of scenic landscapes is grounded in a contemplative appreciation and disinterested embodied enjoyment of the landscape. This echoes what some scholars in environmental aesthetics refer as ‘objective’ criteria of aesthetic appreciation of nature, which include salience (Carroll 1993), disinterested imagination (Brady 1998, 2003), and scientific knowledge (Eaton 1997; Carlson 2000).

Thus, scenic landscapes are characterized by the underlying assumption of a dualism between humans and nature that reflects an opposition between the self and the other. This dualism calls for behaviours that do not interfere with the landscaping dynamics of nature, since humans are considered as threats to the health and natural beauty of ecosystems. Along with the mainstream conservation paradigm based on minimized disturbance and distant stewardship, scenic landscapes tend to be regulated by norms that limit human activities. In this view, nature must remain the sole landscaping agent and human beings are expected to discreetly contemplate its extraordinary work.

Seen through the framework of the milieu, scenic landscapes propose a sociocultural frame to rethink human intervention in nature. Within this frame, visitors are expected to experience the beauty of nature as an object to be admired. They are expected to abide by regulations aiming at preserving natural habitats and sceneries. As shown in the discussion of natural parks, these regulations result from complex negotiations aiming at limiting human presence in certain areas. In short, scenic landscapes are grounded on the underlying assumption that human beings should withdraw from some natural habitats that are particularly beautiful, vulnerable, and biodiverse.

This confrontational perspective on human-nature relations leads to an idea of sustainability that isolates the environment away from human beings. This view of sustainability is based on the assumption that, as long as human beings refrain from intervening in the landscape, their ecosystems will continue to thrive. Thus, scenic landscapes support the idea that human beings are outsiders and a threat to the sustainability of natural beautiful environments.

### 5.2. Cultural landscapes

‘Leaving nature isn’t the best option, we need to take good care of it’, stated an interviewee about satoyama

areas. This reflects an idea of human-nature relations radically different from the one of the scenic landscapes. In this view, culture and nature cannot be separated. Cultural landscapes emerge from the historical relational processes that interweave human cultural activities with their milieu, reason why Knight (2010) designates them as ‘encultured nature’. They are gradually shaped by the regularity of various community practices in interaction with nonhuman entities and with the land. Nature appears as a source of subsistence and therefore must be culturally respected and cared for. Nonhuman encounters are at times conflictual, at times harmonious, but the underlying pattern remains that of *coexistence* thanks to implicit, culturally defined boundaries. These landscapes are, in fact, maintained by respecting the motto, ‘to each its own place’ in which all beings, including human beings, have been assigned a place and role.

From this organisation emerges an idea of sustainability that recognizes the dependency of some ecosystems and some species’ habitats on human activities, and the consequent necessity of human presence for their continued survival and thriving. In contrast to the idea of nature that underlies scenic landscapes, cultural landscapes suggest a familiar nature to which we belong and on which we depend. They induce an appreciation of the landscape through engaged social experiences that attach the individual to the community, and the community to the land, to the point that feelings of belonging and nostalgia are commonly felt by those who have been uprooted from such landscapes. Local communities play a central role in the preservation of cultural and natural assets through traditional know-how anchored in the land. At the core of cultural landscapes are symbiotic interactions between human communities and ecosystems, which are reflected in narratives of harmonious human-nature relations and agrobiodiversity-friendly human settlements.

### 5.3. Ecotopian landscapes

‘Before we design, we need to sharpen our senses first, then our feelings become messages from nature’, explained an interviewee about permaculture design. Unlike scenic landscapes in which we admire nature from a distance, and cultural landscapes in which we are mainly guided by traditional local knowledge of how to live with nature, ecotopian landscapes are ‘living laboratories’ for individuals to experiment and experience ecological utopias (Lockyer and Veteto 2013). These peculiar utopias distinguish themselves by their vision of a just and sustainable future in which human society coexist harmoniously with nature, and their consistent hope for a ‘nature-inspired’ re-design of the whole society (Chakroun 2019) Ecotopian landscapes hence emerge from individual and grassroots experimentations that purposely challenge the dominant socio-economic

and land use paradigms at a microscale. They foster individual reconnection with nature through engaged embodied experiences of multispecies encounters. The designers are required to be ecologically aware and phenomenologically informed, in order to consider the agency of non-humans in the design of landscapes (Chakroun and Linder 2018). The design should imitate patterns found in nature, and use these patterns *to benefit nature itself*, and to unlock the present and future possibilities of ‘multispecies commoning’ (Centemeri 2018) between the multiple human and non-human entities constitutive of each milieu. This ‘co-agency’ partakes in the foundation of an epistemology based, among other things, on a sense of mutual caring (Puig de la Bellacasa 2010). In this view, the land use by human beings is consciously designed to result in an inhabitable milieu for a diversity of other species. Reciprocally, the care for the diverse non-human elements of the landscape – the river, the woodlands, the paddy fields, and the wild plants and animals, but also the soil and its microorganisms – partakes to make milieus inhabitable for human beings. As a result, ecotopian landscapes prefigure non-dualistic ways of relating to the non-human, and suggest alternative modalities of multispecies interactions.

This perspective on human-nature relations heads towards a conception of multispecies sustainability. Rupprecht et al. (2020, p. 8) propose to define it as ‘meeting the diverse, changing, interdependent and irreducibly inseparable needs of all species of the present, while enhancing the ability of future generations of all species to meet their own needs’. Along this line, ecotopian landscapes foster sustainability by the caring, yet experimental collaboration between the different species of the ecosystem.

## 6. Conclusion

Through the analysis of the landscapes of natural parks, satoyama, and permaculture, this article highlights that sustainability cannot be levered without considering the extant diversity of human ways to live with nature (point 1 below). We derived four subsequent results (points 2 to 5) that correspond to each of the steps of the framework of the milieu: the individual experience of nature, individual behaviours, the interconnection of milieus, and their historical processes.

- (1) *Understandings of sustainability are underpinned by various ideas of human-nature relations that can be complementary insofar as they support diverse healthy ecosystems.*

Sustainability is closely related to the many ways humans make sense of their milieu, themselves influenced by the possibilities of connecting and engaging

with nature. Thus, various ideas of human-nature relations underpin different understandings of sustainability, which can be complementary insofar as they together contribute to ecological integrity and social viability (Luederitz et al. 2017). In this perspective, ecosystem simplification may impoverish the complexity of social-ecological interlinkages (Dorninger et al. 2017) hence diminishing the variety of embodied experiences of nature (Soga and Gaston 2016), eroding relational values (Riechers et al. 2020b), and reducing the range of ethical ways of cohabiting with the non-human world (Bieling et al. 2020).

Far from being mutually exclusive, the three landscapes and their underlying ideas of nature together encompass and foster diverse meaningful relations, valuable habitats, and healthy (agro)ecosystems. Characterized by a land-sparing strategy, natural parks enable species sensitive to minor anthropogenic changes in their habitat to thrive, but do not imply restrictions for the rest of the territory (urban and agricultural areas), which often suffer from biotic homogenisation and loss of ecosystem resilience. Closer to a land-sharing strategy, satoyama and permaculture value daily human-nature interactions and favour cultivated biodiversity and agroecosystems. Grounding the search for sustainability in landscapes as concrete instances of human-nature relations could help overcome the debate between land-sparing and land-sharing that still divides the field of biodiversity conservation (Kremen 2015; Stott et al. 2015; Grass et al. 2017), and generate more appropriate ways of framing and solving sustainability issues.

- (2) *To lever sustainability, human-nature connectedness must be considered interdependently with the complex cultural and socio-ecological dynamics of the landscape.*

This diversity of ideas of human-nature relations anchored in landscapes is reflected in how individuals experience each landscape. In each of three landscapes, individual experiences of nature are different, but all described in terms of closeness and connectedness. One can feel deeply connected to nature when admiring its timeless splendour as a spectator in awe, when working together with it following the footsteps of past generations, or when designing it fully aware of the multiple species cohabiting it. Human-nature connectedness is multidimensional and does not necessarily refer to the quantity of interactions between humans and nature. In other words, individual experiences of human-nature connectedness are dependent on and fuelled by complex cultural and socio-ecological dynamics (Riechers et al. 2020a). To lever sustainability, human-nature connectedness must be considered interdependently

with these dynamics. For example, despite their confrontational dualistic idea of human-nature relations, natural parks foster a transient, but powerful experience of reconnection with nature. This brevity has helped wildlife to thrive while encouraging people to adopt pro-environmental behaviours on a daily basis. At the other end, permaculture aspires to reconnect human to nature through daily interactions. This proximity may not be tolerated by all plants, animals or fungi, but it favours the preservation and enrichment of cultivated biodiversity and agroecosystems.

- (3) *Within landscape dynamics, individual behaviours are a nexus where underlying ideas of sustainability are being either accepted and enacted or criticized and transformed.*

Experiences of landscapes encourage individuals to adopt specific sustainable behaviours towards nature (e.g. Nisbet et al. 2009). By behaving in one way or another, individuals negotiate their place in nature and support different underlying ideas of sustainable human-nature relations (e.g. Pyle 2003). For example, in satoyama areas, sustainable and harmonious human-nature relations can be continued only if everyone is playing their role well, be it human beings or other species with which they share the local environment. Further, permaculture designers describe their work as challenging the dualistic ideas of human-nature relations underlying modern science and industrial agriculture. They act as part of the multispecies community, guided by their intimate connection with the local environment. As such, permaculture projects illustrate that individual behaviours can be levers for implementing sustainability at local scale.

- (4) *The sustainability of landscapes and milieus depends on regional ecological connectivity and on global dynamics.*

On the Japanese territory, the landscapes of natural parks, satoyama, and permaculture are closely integrated within the surrounding areas and cannot be considered nor managed as islands (Palomo et al. 2014). They are also mutually ecologically interconnected. For instance, rivers spring in the mountainous forests protected by natural parks, irrigate the rural and suburban ecosystems of satoyama, and flow into the sea through the coastal lands of *satoumi* (Watanabe et al. 2012), hence distributing nutrients in the watershed. This ecological connectivity allows the joint maintenance of a diversity of natural habitats, while enabling many species to navigate across ecosystems and flourish (Grass et al. 2017; Hirschfeld and Van Acker 2020). With the fragmentation of the territory by urbanisation and intensification of agriculture, the eco-hydrological connectivity is being

hampered, causing biodiversity to dwindle rapidly (Jiao et al. 2019). Adopting a more integrated management at the regional level, with measures such as ecological corridors between wildlife habitats and cultivated fields would overall support greater biodiversity (Watanabe et al. 2012; Jiao et al. 2019).

On top of this regional connectivity, the sustainability of the three studied landscapes depends upon global dynamics. Landscapes are globally interconnected and continuously accommodated with various material flows (air, nutrients, goods, etc.) (Nassauer 1997; Dorninger et al. 2017). Anthropogenic environmental changes have an impact even on remote areas, even where human intervention is strictly regulated, such as natural parks. Climate change affects the local environmental conditions all over the world, forcing the species that can relocate quickly enough to move (Lenoir et al. 2020). Invasive species disturb local ecosystems and sometimes push other endemic species to the brink of extinction (IPBES 2019). The dynamics of the three landscapes we analysed in this article are subject to these large-scale anthropogenic environmental changes. Besides, landscapes and milieus are also crossed by immaterial flows, such as ideas and worldviews of nature (Droz 2020b). The ideas of natural parks, satoyama, and permaculture emerged in specific contexts and were internationalized in the name of sustainability and nature protection. Therefore, landscapes and milieus cannot be sustainable independently from global dynamics.

- (5) *Implementing sustainability locally or regionally requires considering the specificities of the long history of human-nature relations that constituted the landscape.*

A disconnected global thinking might ignore the web of meanings and the various daily encounters that make and sustain a milieu. If we follow too strictly the slogan ‘think global, act local’, frequently mentioned in the debates on the Sustainable Development Goals, we run the risks of overstepping local communities’ worldviews and of overlooking potential pathways for sustainability gained from local knowledge systems that have accumulated centuries of expertise from interactions with the local ecosystems (Jordan and Gilbert 1999; Watanabe 2018). Approaching sustainability through landscapes compels us to acknowledge the collective intergenerational processes of interactions between the lands and waters, and the communities that inhabited them throughout history. By paying attention to landscapes, to their underlying ideas of human-nature relations, and to the interdependency between the ecosystems and the people they are made of, we ensure an approach to sustainability that values simultaneously ecological integrity and the diversity of human ways to live and make sense of their milieu.

## Acknowledgments

We thank the two anonymous reviewers and the editors for the substantial improvements made on the basis of their remarks. The article also greatly benefitted from the proof-reading and advices of Prof. Christian Arnsperger, Dr Maraja Riechers, and Dr Yvan Droz.

We wish to gratefully acknowledge two photographers: Nagatomo Taiki (tn911927.jimdofree.com), for providing us with his photograph of Daisetsuzan National Park, and Matthieu Zellweger/Haytham Pictures (matthieuzellweger.com) for the photograph of Satoyama used in this work. We finally thank the Japanese permaculture designer Yotsui Shinji (soildesign.jp) for the photograph we took during the permaculture design workshop he organized.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Funding

This work was conjointly supported by the Swiss National Science Foundation under the Doc.Mobility Grant [184043] given to Leila Chakroun and by the Japanese Government [Monbukagakusho: MEXT] scholarship N.150559 granted to Layna Droz. The Open Access publishing of this article was funded by the University of Lausanne within the framework of its Open Science Strategy.

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