Article

Online and Offline Representations of Biocultural Diversity: A Political Ecology Perspective on Nature-Based Tourism and Indigenous Communities in the Brazilian Pantanal

Koen Arts [1,2,*] , **Maiara Thaisa Oliveira Rabelo** [3] , **Daniela Maimoni de Figueiredo** [3] , **Georgina Maffey** [4] , **Antonio Augusto Rossotto Ioris** [5] **and Pierre Girard** [2]

[1]   Forest and Nature Conservation Policy Group, Wageningen University and Research,
      6708 PB Wageningen, The Netherlands
[2]   Pantanal Research Centre, Cuiabá 78.068-360, Brazil; pierregirard1301@gmail.com
[3]   Postgraduate Program in Water Research, Federal University of Mato Grosso, Cuiabá 78060-900, Brazil;
      tha.rabelo@hotmail.com (M.T.O.R.); dani_figueiredo@uol.com.br (D.M.d.F.)
[4]   Joint Institute for VLBI ERIC (JIVE), Oude Hoogeveensedijk 4, 7991 PD Dwingeloo, The Netherlands;
      ginazoo@outlook.com
[5]   School of Geography and Planning, Cardiff University, Glamorgan Building, King Edward VII Avenue,
      Cardiff CF10 3WA, UK; IorisA@cardiff.ac.uk
[*]   Correspondence: koen.arts@wur.nl

Abstract: The concept of biocultural diversity is confronted with contemporary changes that impact on local communities, such as globalization and digital transformations. Engaging the conceptual flexibility of 'biocultural diversity', we studied nature-based tourism at the intersection of indigenous communities and the digital realm. We employed a political ecology perspective to examine online and offline representations of biocultural diversity in the Brazilian Pantanal, one of the biggest wetlands in the world, and home to groups of peoples known as the Pantaneiros. Data from interviews with 48 stakeholders in the tourist sector were structured along three 'myths'—the Uncivilised, Unrestrained, and Unchanged—for which we have also constructed counter narratives. Each myth denoted the primacy of biodiversity, and ignored broader dimensions of the Pantanal as a bioculturally diverse landscape. The relationships of the Pantaneiros with their environment were found to be intricate and had clear repercussions for tourism, but ironically, reference to the Pantaneiro culture in nature-based tourism was superficial. Moreover, thriving on the myths, this form of tourism perpetuates skewed power structures and social inequalities. Lower-class Pantaneiros likely suffer most from this. We recommend stakeholder engagement with a biocultural design that facilitates the integration of other-than-biodiversity values, and that thereby promotes sustainability of the entire social-ecological system.

Keywords: counter-colonial discourse; digital conservation; ecotourism; human–wildlife interaction; jaguar (*Panthera onca*); myth and counter narrative; Pantaneiro; primacy of biodiversity; social-ecological system; sustainability

1. Introduction

Biocultural Diversity, the Digital Age, and Nature-Based Tourism

The concept of biodiversity has been central to global conservation efforts since at least the 1992 Rio Earth Summit. It has been effective in guiding and enforcing nature conservation and has become part

and parcel of mainstream environmental discourses and initiatives [1]. Yet, despite this, the concept has received criticism too. Focusing on landscapes, species, and genetic diversity, biodiversity overlooks human and cultural components of landscapes [2,3]. As such biodiversity conservation has conceptual roots in one of the earliest institutionalised expressions of nature conservation: the National Park movement that commenced with Yellowstone in 1872. In their most stringent form, both National Parks and biodiversity protection may lead to so-called fortress conservation in which rigid boundaries between human and nature are drawn. Both in historical and recent times, indigenous communities and other local peoples have been suffering from the consequences of fortress conservation, which have included displacement, restricted land access and rights, and unfair relations of production [4].

Understandings of biocultural diversity—the interrelated and co-evolved diversity of life in its biological and cultural manifestations [5]—takes a more holistic approach to natural areas and its inhabitants than biodiversity conservation does. 'Biocultural diversity' explicitly embraces the notion of social-ecological systems, in which the interrelatedness between rural populations and the natural environment are emphasised, either in a traditional setting or with regard to newer human-nature interactions [2,6]. Moreover, biocultural diversity aims to pay heed to the various cultural manifestations—such as worldviews, languages, sources of knowledge—which are produced in dynamic and adaptive processes, and embedded in their social-ecological systems [7–9].

Yet, the concept of biocultural diversity may itself be at risk of closing off important perspectives on reality, through its returning associations with 'traditional' dimensions of local communities and 'primitive' ecological knowledge. In the context of a globalizing world, indigenous communities rapidly change in their outlook and constitution, traditional ecological knowledge blurs with modern ecological knowledge, and the alleged 'primitiveness' of rural people is challenged by participation in digital networks that connect citizens around the world [10,11].

Operating at the interface of biocultural diversity conservation, local communities and digital realms, nature-based tourism offers a pertinent focus to explore and develop the conceptual flexibility of 'biocultural diversity' in the context of the digital age. We take a political ecology perspective in which commitment is expressed to environmental sustainability in general, and social equality of stakeholders in natural resource management in particular [12]. From this perspective, we examine online and offline representations of biocultural diversity in the context of nature-based tourism and indigenous communities in the Brazilian Pantanal wetland. As an analytical tool for our interview data we use three socio-cultural 'myths' that have been identified in tourism literature: the Uncivilised (destinations represented as lacking civilization; where wild nature abounds), the Unrestrained (destinations represented as offering a comfortable, luxurious environment), and the Unchanged (destinations represented as being fixed in the past, with unchanged locals) [13]. Through online and offline representations, which form the building blocks of the myths, nature-based tourism along the Transpantaneira Pantanal features each of the three myths. Feeding into counter-colonial discourses, we debunk the three myths, and in a political ecology tradition, pay specific attention to vulnerable social groups in the system, in this case lower-class Pantaneiros. We finally argue that by reconnecting the tourist sector with the notion of biocultural diversity, it may be possible to construct a more sustainable social-ecological system.

2. Materials and Methods

2.1. Theoretical Background

2.1.1. Political Ecology and Biocultural Diversity

The management of natural resources and the conservation of biodiversity is inherently political, and political ecology asserts that social and environmental conditions are thoroughly intertwined [14]. Some scholars emphasise that the way nature is understood is political too, and that special attention should be paid to "the discourses and practices through which nature is historically produced and known" [15] (p. 325). These discourses and practices, Escobar (1996) argues, are often established by

capital and technoscience, and may be reproduced in the form of 'big narratives' such as biodiversity conservation and sustainable development [15]. Key then, is to uncover and understand interactions between how nature is understood and engaged, and the politics of environment-related action [14,15]. In these interactions, power-relations between actors are a typical element for scholarly investigation because the relations and associated struggles tend to result in decisions on access and control of natural resources [12]. Access and control have direct consequences for e.g., welfare, human rights, inclusion, emancipation and social mobility. Given that power-relations surrounding natural resources are often asymmetrical and perpetuate injustices and forms of socio-spatial exclusion [16], the task of political ecology is both descriptive and normative (cf. [17]); issues and inequalities need to be made visible, and asymmetries addressed.

Political ecology has received criticism from various corners. Vayda and Walters (1999) argue that by overemphasizing politics, there is often a risk of neglecting the very dynamics that cause environmental change [18]. Hinchcliff (2008) asserts that political ecology should look beyond presence, inclusion or accumulation and more carefully consider "uncertainties, precautionary measures and looser forms of assemblage" [19] (p. 89). A growing body of literature addresses political ecology's anthropocentrism, and poses related questions of how the approach could be opened up to post-human geographies [20,21]. In their recent political ecology study of tiger conservation in India, Margulies and Bersaglio (2018) use myths as a conceptual tool to analyse power asymmetries. The authors state: "myths, as ways of making sense of worlds, are always rooted in specific onto-epistemological traditions; power-laden narratives that work to re-produce particular ways of being and knowing while foreclosing alternative possibilities" [20] (p. 105). In the same way the authors critically evaluate dominant ecological narratives about tigers as myths, we aim to evaluate dominant myths about the Pantanal and its inhabitants reproduced by the tourist sector. Thereby, we aim to "reveal some of the politics, power asymmetries, and particularities that trouble claims of objectivity and universality" [20] (p. 105), which may underpin dominant engagements with the Pantanal.

Given the remits of a political ecology approach, it is particularly well situated to facilitate a focus on biocultural diversity. The concept of biocultural diversity is used in many ways, including in studies about how a social environment affects human biology [22]. In our context, it is explicitly about the relationships between biodiversity and cultural diversity (cf. the earlier mentioned focus of political ecology on the relationships between social and environmental conditions). Or, as Cocks and Wiersum [23] (p. 727) describe the term: "the sum of the world's differences regarding biological diversity at all levels and cultural diversity in all its manifestations, and their interactions." Moreover, 'biocultural diversity' incorporates descriptive and normative perspectives too [17]. Because it seeks to contextualise knowledge and worldviews, it requires a kind of governance that recognises diversity [24] and stimulates empowerment [25]. As such, our political ecology approach and associated focus on biocultural diversity, enables us to engage in a critical way with the Pantanal social-ecological system to feed into more sustainable governance of both social and biological processes.

2.1.2. Tourism and Digital Innovation

One of the main sectors that is currently imposing changes on the Pantanal and its inhabitants is tourism. While some scholars are optimistic about potential positive effects for local communities [26,27], others point at the problems that follow from this intersection. Cater [28] emphasises that 'ecotourism' is a Western construct, tied up with paradigms of sustainability and development. It promotes commodification of nature and may introduce or perpetuate prejudice and power play at the expense of local peoples. In the Pantanal, nature-based tourism is growing rapidly, posing acute challenges and opportunities to the area.

Mehmetoglu [29] suggests that nature-based tourists can be clustered in three groups: culture and pleasure activity oriented, nature activity oriented, and low activity oriented. This aligns with various levels of activity-dependence on nature (high dependence, enhancement, and incidental) [29], which can also be conceptualised as nature as foreground (cf. nature activity oriented), and nature as

background (cf. 'low activity oriented', and 'culture and pleasure activity oriented'). In the Pantanal, certainly along the Transpantaneira road, the orientation of tourism is towards nature activity; nature is at the foreground of attention [30].

As with many other domains in societies, including that of nature conservation [31,32] tourism is subject to digital innovation (innovation is here understood as industrial or professional development of an invention) [33]. This holds particularly true for the marketing side [34], of which almost any dimension is influenced by the opportunities that digital technologies offer. Generally, even though the tourism industry often employs defensive strategies [33], Information and Communication Technologies (ICTs) have led to increased competitiveness, efficiency and business performance in the sector [35,36]. Social media and networks have halted the monopoly on information transmission by traditional sources. Through posts and other inputs in digital networks, individuals are pivotal in the formation of destination imagery [37]. This could be by means of evaluation of personal experiences through e.g., TripAdvisor [38]. High rankings in the results of search engines play a big role in click-through rates [39], and thus in potential online bookings. The latter are also strongly influenced by perceived value and trust of a source [40]. Destination images on websites from tourist experience suppliers are more effective when emotional messages are employed, and information quantities reduced [34]. Equally, it pays off for suppliers to invest in customer relationships through social media [41].

As a result of digitalization, imagery has become central to communication in human-environmental relationships more broadly [34,42,43]. Igoe [44] links this to the intertwining of nature conservation and capitalism, of which the rise of digital communities and networks is an important dimension. Hardware such as smartphones have allowed for 'always on' ubiquitous computing experiences, and transformed the tourism industry because information is accessed and images exchanged while on vacation [45]. Kim and Stepchenkova [46] show that the latent content of tourist photographs such as crowdedness, cleanliness, level of modernity and extent of commercialization can be as important as manifest content. While what is taken away from the images also depends on what the receiver reads into it, tourism industries increasingly employ digital media to disseminate their crafted imagery [46].

2.1.3. Representations and Myths

The proliferation of imagery may feed into the perpetuation of existing, or the creation of new, representations or narratives. Specifically, for the Pantanal, Girard and Vargas [47] suggest three key representations: the Scientific Pantanal, which focusses on the scientific description of biodiversity; the Pantaneiro Pantanal, which emphasises the socio-cultural relationships with the environment; and the Google Pantanal, which is constructed by the tourist industry and revolves around a pristine Pantanal exempt of human presence. The authors argue that the representations do not really feature beyond these categories and criticise them for the restricted and unconstructive perspectives that they offer. Similar representations have been described for tourism more broadly as the marketing of 'un' myths. Echtner and Prasad [13] distinguish three. First is the myth of the Unchanged, in which Third World destinations are fixed in the past. The authors locate this primarily in the Middle East-Asian nexus (e.g., China, Egypt, India, Turkey, and Thailand). In these destinations the tourist travels back in time to a world of ancient civilizations, in which images of the past are surrounded by atmospheric themes of opulence, mysticism, and strangeness. Importantly, the local people are portrayed as unchanged and exotic relics. Second is the myth of the Unrestrained, in which the destination and its people are open and willing to offer a comfortable environment to the tourist. Destinations are typical resort paradises such as Cuba, Fiji, and Jamaica, offering the best resorts and entertainment. Unlike the myth of the Unchanged, the myth of the Unrestrained is not mystical or strange, but comprehensible and comfortable. Third, is the myth of the Uncivilised, in which tourists go on expedition into areas where civilization is absent and nature savage. Buildings or locals play no role in these destinations. Echtner and Prasad [13] stress the need for counter-colonial discourses to resist these harmful representations.

In the following analysis we use the 'un-myth' framework to structure our results. We understand myths as consisting of 'smaller' representations which are (re-)produced offline, online, or both ways. These representations thus form the 'building blocks' of the three key myths.

2.2. Methods

We employed our political ecology perspective by means of a qualitative interpretative analysis [48] that revolved around the construction of narratives [49–51]. The data that fed into these narratives was generated by means of interviews (*n* = 48) which fell into two categories: scoping interviews (*n* = 14) and in-depth interviews (*n* = 34). The scoping interviews were ad hoc, short conversations related to the Pantanal communities, use of ICTs, and the dynamics of nature-based tourism along the Transpantaneira Pantanal. Some of these were recorded with an electronic device and transcribed. In the unrecorded cases, extensive notes were taken. The outcomes of the scoping exercise, together with findings from the literature, fed into the in-advance formulated questions for the in-depth interviews [52]. The interviews were semi-structured so that the prepared questions functioned as a red thread through all the interviews, but also so that elaborations or unexpected directions could be accommodated for. The interviewees were sampled through the scoping interviews, through snowballing and by means of web searches. Two or more interviews were conducted with eight out of nine interview groups that emerged from the scoping exercises (Table 1). A mixed representation was sought of people with a range of functions, backgrounds and relationships with the area. Interviews were held in Portuguese or English, depending on the preference of the interviewee. Free, prior and informed consent was acquired beforehand and permission for the recording of all interviews was obtained in writing. To encourage informants to speak freely, anonymity was assured. All recordings were verbatim transcribed and the resultant data processed in NVivo 12 Pro software. Including subthemes, 22 coding categories were inductively identified, i.e., abstracted from the data based on returning themes and topics. On the basis of the emerging materials, the text was constructed according to the 'un-myth' framework [13], including counter narratives with representations for each myth (see 'debunking the myth' sections in the Results).

Table 1. Interviewee groups and interviewees (*n* = 48). Interviewee references are preceded by 'i' and presented in curly brackets {}. Note that in-text literature references are indicated with brackets [].

	Scoping Interviews (*n* = 14)	In-Depth Interviews (*n* = 34)
Environmental researcher		{i20, i23, i43, i44, i48}
Governmental organisation		{i15, i16, i45, i46}
Nature guide	{i2}	{i17, i18, i39, i40, i41}
Non-governmental organisation	{i1}	{i26, i47}
Pousada owner		{i19, i27, i28, i31, i33, i35, i38, i42}
Pousada/hotel manager	{i3, i11}	{i29, i30, i32, i34, i36, i37}
Tourism infrastructure related		{i24, i25}
Tourism support staff	{i5, i12, i13, i14}	
Tourists	{i4, i6, i7, i8, i9, i10}	{i21, i22}

2.3. Context of Study

2.3.1. The Pantanal

The Pantanal, meaning 'great swamp', is the world's largest tropical floodplain, covering about 160,000 km^2 in the geodesic centre of South America. While stretching into Bolivia and Paraguay, about 86% is situated in Brazil between the two provinces of Mato Grosso and Mato Grosso do Sul [53]. The annual rainfall of 1000–1250 mm is concentrated in the rainy season from October to April [54]. Rainfall in the Pantanal and its upstream areas feeds into an annual monomodal flood pulse [54, 55], which creates a diverse biome comprising dry forests, wetlands, river corridors, lakes, gallery forests and seasonally inundated grasslands and woodlands [56]. These areas form habitats for many

vulnerable or endangered flagship species including lowland tapir (*Tapirus terrestris*), giant anteater (*Myrmecophaga tridactyla*), hyacinth macaw (*Anodorhynchus hyacinthinus*), giant otter (*Pteronura brasiliensis*) and jaguar (*Panthera onca*) [53,57]. In a WWF assessment the Pantanal was ranked 'globally outstanding' in its biological distinctiveness [55].

Human occupation of the Pantanal extends over a period of around 5000 years, beginning with groups of Tupi-Guarani Indians who settled in the area. Yet, despite this long period of occupation, today's population density is low and concentrated in small urban areas at the Pantanal borders, along the major rivers, and in the ranches dispersed around the basin [55]. The history of these ranches dates back to European colonization and the introduction of cattle in 1737 [58]. Over the past centuries beef cattle ranching has been the main economic activity [55]. About 4 million head of cattle [53] are extensively ranched across at least 80% of the Pantanal lands [26]. Remarkably, 95% of the Pantanal land is held in private ownership [26]—a high proportion for an area that is renowned for its biodiversity.

While the impacts of cattle ranching have been brought to light—such as competition for space with wild animals, and the introduction of fencing and exotic grasses [59]—many commentators argue that the effects of these practices are relatively small on the Pantanal system [55,60]. Indeed, the challenging environmental conditions, difficulty of access, and lack of major urban areas also contribute to the argument that the Pantanal is still in a "rather pristine condition" [55] (p. 301) with "a history of harmonious coexistence of man and biodiversity" [61] (p. 115).

However, human threats have been imposed on the Pantanal for many decades [62] and are manifold today. These include: river flow modification as a result of hydroelectric plants such as the Manso dam [55,61]; problematic upstream practices leading to e.g., river silting and changing aquatic food systems [63]; potential revival of the proposed Hidrovia project to canalise the Paraguay River for commercial transportation of commodities e.g., soybeans to the Atlantic ocean [54,56,64,65]; conversion of natural vegetation into pasture and crops [66]; unsustainable recreation and tourism [30,67]; gold mining [30]; agricultural modernization [58]; drug trafficking [68]; water pollution [64,66]; introduction of invasive exotic species [66]; lack of environmental awareness of stakeholders [69]; socio-environmental inequalities [69,70]; and human–wildlife conflict, notably concerning rancher-jaguar interaction [53,71,72].

There are more than 120 laws on environmental aspects of the Brazilian Pantanal [64,73] and several conservation designations apply to parts of the region, e.g., Ramsar, UNESCO Biosphere Reserve and the World Heritage List [63]. Still, only a limited percent of the Brazilian Pantanal is protected by the government [66], and issues relating to lack of law enforcement [54,63,68] and inadequate legislative frameworks [74] regularly occur. Furthermore, a range of underlying, socially complex mechanisms have been identified that characterise the socio-political context. Gottgens et al. [56] (p. 301) mention the "tyranny of small decisions" which refers to the detrimental cumulative effect of small-scale actions. Ioris [64] (p. 239) emphasises the lack of shared understanding about who is responsible for environmental degradation, and observes that stakeholders often point at 'vague others' who are deemed responsible for the damage done (see also [75]).

2.3.2. Biocultural Diversity, Indigenous Peoples and the Pantaneiros

As with other bioculturally diverse, mosaic landscapes, the Pantanal is historically shaped by people who have developed a deep attachment with it, and vice versa [76]. A number of studied examples indicate the richness of biocultural diversity in the Pantanal. They relate to local knowledge of floodplain-specific ecologies [61,77], plant use for medicinal purposes [26] and name giving to land- and waterscape features [58].

From the arrival of Europeans which quickly reduced native populations, to the present-day threats imposed by landscape scale projects [61], the native people of the Pantanal have suffered over the last three centuries. A social mapping exercise in 2008 brought together 500 representatives of approximately 65 distinct groups in Mato Grosso including: indigenous communities; traditional

communities; (former) extractivists and rubber tappers; fishermen; Quilombolas, descendants of Afro-Brazilians; Morroquinos, small scale farmers; and ranchers [70]. The emerging insight into issues around land and natural resources revealed 194 sites of socio-environmental conflict across Mato Grosso. Importantly, across these social groups, 19 indigenous ethnicities and indigenous lands were represented [70]. A key point here is the sheer variety of ethnicities, to which modern social or geographical boundaries do not necessarily apply. The latter holds true for the term Pantaneiro as well. Girard [58] points out that the simplest way to define a Pantaneiro is 'a person who lives in the Pantanal'. This includes a broad range of people, from farm owners to retired foreigners and workers in the tourist industry. Yet it ignores the complexities of (collective) identity construction, reducing the Pantaneiro identity to a mono-dimensional geographical category. Sato et al. [70] identify several socio-geographical categories: (1) cultural tradition; (2) cultural place and habitat; (3) labour, work and production; (4) driving forces and development; and (5) choices, alternatives or philosophy of life. The Pantaneiros may be (self-)defined through any of these categories, and possibly across multiple. Meanwhile, stereotypes ascribed to the Pantaneiros need to be treated with caution, acknowledging that they are often fed by romanticised, externally imposed notions. For instance, Pantaneiros are usually associated with the peons, the South-American equivalent of the North American 'cowboys', who ride the horses, drive the cattle and live in the landscape year-round, in harsh but 'rustic' conditions. They are allegedly characterised by an "extreme simplicity in the way of living" (Rossetto in [58] (p. 10)). According to Charnoz [73] (p. 39) the peons, representing multi-generational mixes of native tribes with Afro-descendants and European colonisers, form the "soul" of the Pantanal [58]. Yet, ribeirinhos also find subsistence in the Pantanal, mainly through fishing. They tend to identify with the water [78]. Ribeirinhos are also Pantaneiros in that they have a distinct lifestyle in close interaction with the landscape. But with their strong dependence on water they differ from other Pantaneiros, such as the Fazendeiros, the farm owners who "often live in cities neighbouring the wetland" [75] (p. 39), or from substantial populations in the Pantanal region dwelling in small, century old cities like Poconé, Barão de Melgaço and Corumbá [58]. In sum, the 'Pantaneiro' is an anthropological concept difficult to delineate as it may refer to one or multiple social identity constructions. It may be inclusive or exclusive, depending on who uses it in what context. It may be male-specific or gender neutral, and used symbolically or descriptively. It is as much a token of the mixture of ethnicities to be found in the Pantanal and in Brazil at large, as a word that is grounded in a centuries-old intertwinement of cattle ranching as the dominant, but not sole form of land use.

Moving beyond the question of who the Pantaneiros are, from a political ecology perspective it is arguably more important to be sensitive to socioeconomic inequalities pertinent to the area [69]. There is a strong divide between landowners, Non-Governmental Organisations (NGOs), government representatives, well-off visitors like Brazilian and foreign tourists and recreational fishermen, as well as those whose employment is derived from activities in the area, such as "janitors, peons, cooks, maids, etc." [58] (p. 10). Ioris [64] notes that the Mato Grosso Pantanal Law from 2011 (PL750) prejudices the agribusiness sector and penalises traditional communities living in the Pantanal. In the creation of the Pantanal Regional Park (PRP), a project from 1998 that was supposed to revolve around community participation, local community groups and rural workers were virtually absent from the governance process, which reinforced the socio-political status quo of the region [73]. Importantly, those operating in the margins of local economies and those with strong dependence on the land- and waterscapes are most vulnerable to large-scale development projects and fluctuations in (global) markets [56,64].

2.3.3. Tourism in the Pantanal

In line with growing ecological tourism in Brazil in the last decades [79], nature-based tourism has been growing steadily. The city of Cuiabá, founded in 1719 as part of a gold rush, is one of the main gateways to the Pantanal. From there, it is a 1.5 h drive to the gate of the northern Pantanal, where the Transpantaneira road begins. The construction of the road commenced in 1971, and was supposed to connect Poconé in Mato Grosso with Corumbá in Mato Grosso do Sul [30]. However,

the flood pulse made it particularly difficult to construct and maintain a permanent road, and the route from Corumbá was discontinued. With less intense flooding in the northern part of the region, the construction made it to Porto Jofre on the state border along the Cuiabá river. This 147 km unpaved, straight road was used by farming communities, but the decline of the beef market in the 1980s, and the increase of tourism, shifted its prime function [30]. The Transpantaneira became key to venturing tourists finding accommodation in fazendas (i.e., ranches) dotted along the road. Some of these fazendas transitioned from cattle farming to pousadas (i.e., guesthouses or hotels), often maintaining the same owner. The Transpantaneira Pantanal has thus developed into one of the most important hubs for international nature-based tourism in the entire Pantanal. Many pousadas provide complete packages, i.e., lodging, food and various activities and infrastructures, such as horse rides, boat tours, watchtowers, boardwalks, and night tours to spot charismatic wild animals like caiman, capybara, anaconda, otters and monkeys. For birdwatchers too, many pousadas are very appealing [67]. The end point of the Transpantaneira road, Porto Jofre, has become a prime gateway for jaguar boat tours, and usually features in itineraries. Due to flooding many pousadas close down for part of the year, with high seasons extending over the dry period. Around 90% of the customers in the dry season are foreigners, usually from North America, Europe and Japan [30]. It is estimated that the industry along the Transpantaneira road draws around 70,000 visitors a year [68].

3. Results

3.1. The Myth of the Uncivilised: A Magical Biodiversity Hotspot

The dominant representation that emerges from the interview data, and generally strongly endorsed by representatives of the tourist sector, is that of pure nature. Frequently, interviewees used labels such as beautiful, fantastic, wonderful, magical, a biodiversity hotspot, an explosion of wildlife. The focus is on charismatic animals, particularly birds, large reptiles and mammals. Birders from around the world arrive with species 'wish lists', which they try to tick off with the help of highly specialised guides. These guides tend to speak excellent English and often have an academic degree in biological sciences. Cross-fertilizations between the domains of science and tourism are clear, and also visible through e.g., extensive species lists and ecological assessments to be found on pousada websites, citizen science apps that benefit from recorded observations (e.g., WikiAves—bird species; Urubu—animal roadkill), and NGOs operating at the interface of tourism and ecology.

Digital technologies emerged as pivotal in the reproduction of the myth of the Uncivilised. Pousada website photos often depict close-up portraits of species and of wild landscapes, with any hint of human features systematically excluded. These unspoiled nature images also featured in National Geographic (Secret Brazil: Wild Pantanal, 2012) and BBC (Wild Brazil, 2014) documentaries, which according to informants signified additional impulses for international tourism.

Narrowly intertwined with this representation is the importance of preservation of the natural resources. Again, ICTs play an important role here, as they enable the tourist sector to self-organise and regulate:

> "With the ease of WhatsApp we have many environmental protection groups and this reaches a greater number of people and facilitates this type of manifestation. This type of movement is easier to organise by these means." {i30}

Meanwhile, as a result of the Internet, tourists now more often book directly, sometimes through Facebook {i40}, instead of going through operators {i17,i30}. Once in the Pantanal they access the Internet from their smartphones and tablets to read up on the region {i21,i22}, and connect with social media to post images of the day made with digital cameras {i21}.

All pousada owners stressed the importance of the Internet, both for customers to have access during their stay, and for their own purposes, particularly customer relations with social media. "Today everything depends on the Internet" {i27,i28}. One hotel manager emphasised the importance

of speed of information and communication "because tourism today comes down to selling dreams and everything has to be very fast" {i32}. A different interviewee pointed out:

> "Since in the past the tourist was looking exclusively for nature and peace, today we need to keep up with the advances in technology because tourists, besides enjoying nature, always want to be connected to the outside world." {i38}

The resultant of all this is somewhat contradictory: experiences of the pure, wild, uncivilised Pantanal seem especially valued when digitalised, while the myth of the Uncivilised is powerfully reproduced by means of digital technologies.

Debunking the Myth: An Orchestrated Wilderness Experience

The Uncivilised is a problematic myth because it offers a tiny slice of what the Pantanal social-ecological system entails (including extensive ranched areas). For example, it was pointed out that the timing of the current nature-based tourism in the northern Pantanal, coinciding with the dry season, helped to construct a highly selective view of the area. During the wet season tourists would have to deal with more mosquitos, less wildlife visibility (e.g., bird migration), downpours, and expansive flooded areas, making it difficult to access lodges and restricting various activities {i30,i31,i33,i40}. This selective view of the landscape is also reflected in online images. Several interviewees from different stakeholder groups observed that it was not clear from the online material what the Pantanal looked like in other periods of the year {i21,i22,i30}.

The popular boat tours from Porto Jofre to spot jaguars during the dry season also provide tourists with a very particular view on the Pantanal and its largest predator. Firstly, this relates to the link between jaguar behaviour and the dry season:

> "When the rivers are flooded, water is everywhere, and the caimans and the capybaras are everywhere so, no animal has to go to the river to drink water, so the jaguars are, they are where the prey is. (...) In the dry season, when everything is dry and there is only water in the main streams, all these preys are concentrated (...) so all the jaguars are, of course, there as well. (...) the rainy season is beautiful but (...) you must be very lucky to see a jaguar." {i17}

Secondly, it is not that the jaguar density in this riparian forest area is so high {i8}—according to one interviewee one would expect around 10 jaguars per 100 km^2 in Belize {i47}—but rather that the population in this region is less afraid of humans. The area is a state park, which means less conflict with ranching {i41,i47}. It was also mentioned that because of ongoing fishing activity and, more recently, nature-based tourism, the jaguars have become accustomed to the boats. This habituated behaviour has been passed on and enforced in each subsequent jaguar generation {i47}. Thirdly, the guides are in contact with each other by means of radio, notifying each other rapidly of a sighting;

> "We just realised that with radios (...) most of the jaguars would wait (...) so you could call the others and they go and see the jaguars. And so we started to use more radios to increase the sightings and improve the group experiences." {i40}

These three points demonstrate that what tourists see is not simply the Uncivilised, i.e., wild nature in optima forma. Instead, the tourism sector, and to some extent jaguar researchers, orchestrate a very specific perspective on the landscape.

Importantly, cross-fertilization between tourism and jaguar research also causes friction. One interviewee said: "We do not need more jaguars with collars, tourists do not like to take pictures of jaguars with collars" {i47}. This friction denotes different Pantanal 'natures' as constructed by stakeholders. For the researchers, the collaring is an element of studies that often contribute to efforts to combat the illegal killing of jaguar by ranchers throughout the Pantanal—yet, many tourists seemed unaware of this. For tourists, collared jaguars do not align with Uncivilised nature. Importantly,

the phenomenon of jaguar killing is a (declining but nonetheless present) feature of the Pantanal socio-ecological system—but one that the tourist sector does not seem keen to inform tourists about.

In sum, the myth of the Uncivilised is problematic in various ways. Tourists experience only a very organised, coordinated and selective part of the wild nature in the Pantanal (dry season, focus on charismatic animals). They are 'pulled' to highlights by guides and their radios, and are effortlessly moved between sightings (e.g., of habituated jaguars) on fast boats. This type of wilderness experience is orchestrated and smoothened throughout, but nonetheless marketed and represented as a pure experience, as a true expedition into one of the last big wildernesses on Earth.

3.2. The myth of the Unrestrained: Increasing Luxury

The myth of the Unrestrained comprises a development from very basic facilities at the start of the tourist activities in the 1970s, to a contemporary emphasis on comfort and luxury. The Pantanal is not a place where a tourist needs to 'suffer' to spot jaguars and other wildlife. Instead, the Pantanal is place for leisurely and comfortable enjoyment.

The history of nature-based tourism along the Transpantaneira evolved from cattle ranchers who looked for an alternative source of income. This was partly related to the construction of the Transpantaneira {i36}, and a devastating flood in 1974 that allegedly killed one third of the Poconé cattle and consequently changed the local economy {i39,i47}. Our ranch-centered nature tourism "started very rustic", said one interviewee {i40}, but increasingly, a degree of luxury is required for foreign nature-seekers. Indeed, it was observed that the market is changing and that the pousadas need to adapt:

> "There has been an evolution in the facilities, such as acquiring air-conditioning, comfortable beds, swimming pool construction and other improvements." {i33}

The myth of the Unrestrained, in which comfort is the central element, also came to the fore from other observations. With online feedback fora such as TripAdvisor, the rewards for companies and guides to satisfy customers (or penalties for not doing so) have increased {i30,i31,i40}. In addition to the importance of customer satisfaction, the large role of guides and drivers in coordinating wild experiences also shows that nature-pursuit along the Transpantaneira revolves more around comfort than adventure. The general expectation is that sightings of rare species are both easily accessible and guaranteed. This holds true for jaguar spotting, an activity in which a boat may stop right in front of a jaguar on the land. Furthermore, many pousadas offer boardwalks around the lodges so that tourists, when observing nature, can do so in a leisurely and comfortable manner. Pousadas have also invested in habituating wildlife around lodges for maximum ease of observation, for instance by putting out food, or by placing nest boxes for charismatic birds such as the hyacinth macaw.

Debunking the Myth: Insight into the Restraints

Behind the myth of the Unrestrained lie several mechanisms that are problematic. An important factor is that recreation and tourism along the Transpantaneira play out in very different ways, each of which is tied to specific social contexts. The nature-based tourism is upmarket and centred around foreigners. For many Brazilians such engagement with the Pantanal is not feasible. As one interviewee explains it:

> "A teacher in basic education in Brazil, working 40 h per week, receives at the end of the month R$2000. If you stay three days in Pantanal, you spend a month of work." {i20}

Then there are recreational fishermen from all over Brazil who come to the Pantanal. While these people are said to be well off for Brazilian standards, pousadas owners frequently complained that the fishermen often self-cater and "do not spend money" {i3}. The third main group are Poconé locals who go out fishing, particularly on Sundays, with very basic fishing tackle compared to fishermen from outside the region {i23}. It was also observed that there is little to offer for foreign low-budget

holidaymakers. The consequence is that the Transpantaneira Pantanal is not accessible to various social groups in the same way.

Unrestrained tourism requires solid infrastructures and regulation. Amongst interviewees there was a strong sense that the (local) government did very little to support the sector in this regard {i17,i40}. Many spoke about the poor maintenance of the ±120 mostly wooden bridges along the Transpantaneira, or the lack of enforcement of environmental rules and regulations {i30,i32,i33,i34,i38,i40,i43,i44}. This fed into a mentality that interviewee 30 summarised as "the wetland is a land without law" and "each one for himself and God for all". It is from this mind-set that the idea of introducing a tourist tax was generally discarded; not because it was thought of as a bad idea as such, on the contrary, but because of the difficulty of putting such a system in practice given the lack of transparency of money streams to and from government institutions {i31,i32,i36}, and outright corruption {i20}.

The need for pousadas to be self-sufficient was also clear from the perspective that they cannot rely on consistency of electricity supply—for example, generators have to be started frequently {i17,i27,i28}. Similarly, providing customers with Internet access is often challenging and costly:

> "I need to install a system, Internet, I almost invested R$10,000 to resolve my problem, because people all the time complained that my Internet did not work. People want Internet in the room, in the bathroom, under the shower (...) it is crazy. Sometimes they do not see the room. They ask: where is the signal before seeing the room." {i35}

The vast majority of informants found nature-based tourism to be a desirable activity in the Pantanal. Tourism was observed to be growing rapidly {i17,i45}, putting new and different pressures on the Pantanal. Interviewee 17 said:

> "What I think what is going to happen is that some places are going to be too crowded so all people are going to try and find less crowded places in the Pantanal (...) what you see more and more ranches are turning into eco-lodges."

One pousada owner was worried about finding good staff to accommodate this growth {i35}. While many interviewees argued that tourism is needed for the conservation of the Pantanal {i31,i42,i43,i44}. "Only through tourism we will have the conservation of the wetland", interviewee 34 said. However, sustainable growth is steadily becoming a conundrum on various fronts. Interviewee 36 commented that control was needed to prevent tourists from affecting the routines of animals. This concerned jaguar boat tours in particular. Despite best practice agreements between stakeholders in 2011, informants expressed concern about the number of boats stopping simultaneously in front of jaguars {i17,i35,i41}. Moreover, the availability of trained and licenced guides was perceived to be an issue {i17,i30,i33,i34,i35,i37,i38,i42,i45}.

The upmarket nature-based tourism in the Transpantaneira Pantanal builds in various ways on the myth of the Unrestrained. Yet, the interviews uncovered many restraints at play that problematise this myth and the social dynamics that underpin it. Despite the tourist sector's eagerness to promote the myth of the Unrestrained, it appears unsustainable in the long run.

3.3. The Myth of the Unchanged: The Peon as a Mystical, Atmospheric Extra

On the pousadas, reference to the Pantaneiro culture, specifically to the peons, was never far away. Tourists may even experience a slice of the peon life in the marshlands by means of a horseback ride under the guidance of a cowboy. Similarly, images of Pantaneiros on their horses are readily found on the websites of pousadas and tour operators. A classic shot featuring in various leaflets, on websites and in books is that of Pantaneiros driving large numbers of cattle over the Transpantaneira road. In tourist shops Pantaneiro photo books and peon accessories such as large hats are for sale. It was pointed out that "in the Poconé wetland most of the workforce is local, which is important for the population" {i34}. Indeed, tourists may encounter Pantaneiros serving dinner, unpacking bags or cleaning rooms, but would likely not interact much with them {i17,i21,i23}. Related to this myth of the

Unchanged was a sense of timelessness, as if the Pantaneiros had not changed their ways for centuries. This notion was fed by perceptions that many Pantaneiros "are resistant to change" {i20}.

A sense of timelessness was also evoked by 'Casa da Cultura', an organization in Poconé that celebrates and coordinates 'Masquerade Dances'. The dances are unique in Brazil and stem from centuries old indigenous traditions spread by the Piri-Poconé Indians. Although some foreigners would be able to witness performances at state events, these celebrations remained generally unknown to nature-seeking tourists {i26}.

Nonetheless, one interviewee did refer to the Pantaneiros as the most important actors in the region {i45} and several interviewees confirmed their place in the Pantanal system {i15,i16,i33,i40,i41}. One interviewee observed:

> "The wetland is a place that has been little touched by man, it is living nature as it is, a refuge from nature. The Pantaneiro has a connection to preserve this nature while raising livestock." {i18}

To summarise, in nature-based tourism along the Transpantaneira Pantanal, the myth of the Unchanged emerges on the back of the Pantaneiros. While Pantaneiros do not feature prominently or autonomously in any tourist activities, the sector conveniently employs representations of Pantaneiros as mystical extras to create an atmospheric stage for the pleasure of foreign tourists.

Debunking the Myth: Marginalised Pantaneiros

From the interview materials it appeared that the myth of the Unchanged, in which the peon Pantaneiro is an atmospheric extra, is a problematic myth for several reasons.

Firstly, because the relationship that the Pantaneiro cowboys have with their environment is not necessarily as harmonious as it appears in the tourism sector. Even though the illegal persecution of jaguar by ranchers along the Transpantaneira has allegedly diminished, in other parts of the Pantanal this remains a key issue {i17,i40,i41,i47}. Problems with other species also remain. Interviewee 35 argued that:

> "Usually the cowboys do not like conservation (…) [they kill] armadillos because they make holes, or anteaters because they give bad luck." {i35}

Still, it was pointed out that jaguar, for instance, are a part of the Pantanal culture and recognised as such by locals {i47}. It is therefore not the case that the cowboys systematically kill as much wildlife as they can with the aim of eradicating populations. Rather, the peons seem to have different ideas of (the need for) controlling nature than conservationists {i35}.

The effects of ranching on tourism are similarly complex. Several informants pointed out that cattle keep the Pantanal vegetation shorter and the landscape more open, which is beneficial for the visibility of wildlife, and thus for tourism {i33,i47}. This does imply that what tourists are presented with as the natural vegetation of the Pantanal, is in fact a halted stage in succession. The natural reference often comprises much denser vegetation.

Secondly, the myth of the Unchanged is problematic because the Pantaneiro communities are not static nor fixed in time. It was observed that the activities of the local people were changing of late;

> "They are doing less ranching, [less hunting, less fishing] also because now they have other activities that they did not have before". {i40}

Thirdly, because the current infrastructures do not allow for significant involvement of the poorer Pantaneiros in the tourist sector {i17,i30}. While this may suit the myth of the Unchanged as such, the informants denoted a growing unease with the marginal position of the Pantaneiros in the social-ecological system. The poorer Pantaneiros are met with "disregard" {i43,i44} and suffer from the development around them {i48}. Again, it may be suggested that the social inequality created and perpetuated by the current form of nature-based tourism, has a negative effect on the long-term sustainability of the Pantanal.

The Pantaneiros are generally not regarded as autonomous actors in a dynamic social-ecological system. Frequently, their role in the Pantanal is simplified to a stereotype; one that portrays them as belonging more to nature than to culture. This aligns with other literatures that observe mono-dimensional representations of Pantaneiros as if they are solely 'rustic cowboys' that form the 'soul' of the Pantanal (see Section 2.3.2). The myth of the Unchanged perpetuates such representations and counters any potential developments towards Pantaneiro emancipation.

4. Discussion: Representations of a Simplified, Biodiverse Pantanal

Structuring of the interview results according to the myths of the Uncivilised, the Unrestrained and the Unchanged [13] has provided an insightful way to contrast the marketed and imagined Pantanal with the socio-politically troubled Pantanal. Each of the three myths has generated multiple issues with regards to its sustainability, culminating in 'debunked' myths (Table 2). This is not to argue that a commercial sector as nature-based tourism cannot sustain particular representations for marketing purposes. The point is rather that these marketed representations are the performative vanguard of specific approaches and structures that are intertwined with a variety of socio-political issues. In as far as Girard's [58] three categories—the Scientific, Pantaneiro and Google Pantanal—can be read as criticisms of a status quo, our findings show that each of these cuts across our three identified myths. Of course, there is no inherent truth in either categorization; the point is rather to unveil "differences that make a difference" [80] (p. 364). For the tourist sector particular to the Transpantaneira region, we suggest, the different categories could also be framed as the 'portrayal of biodiversity' (the Uncivilised), 'consumption of biodiversity' (the Unrestrained), and the 'decor for the consumption of biodiversity' (the Unchanged). Each of the three denote a primacy of biodiversity, and ignore the wider dimensions that make the Pantanal a bioculturally diverse landscape rather than a biodiversity hotspot. Our results also resonate with other observations made in the literature, and thus strengthen calls for a more sustainable future for the Pantanal and its inhabitants.

Firstly, we mention a striking self-sufficiency in the operation of the tourism sector. Partly aided by new possibilities offered by social media and other ICTs, the sector relies minimally on government support in terms of infrastructure, rules, regulations and enforcement. As some stakeholders described the region as a 'land without law', it is not surprising that a "tyranny of small decisions" [56] (p. 301) jeopardises regional sustainability. Governance of natural resources revolves primarily around self-interests informing small-scale actions. This goes hand in hand with issues of responsibility and the accusation of 'vague others' when damage to the environment is incurred [64].

Secondly, notably visible through the debunked myth of the Unrestrained, the tourism sector thrives on set social inequalities regarding labour and revenue division, operation of key infrastructures (e.g., tourist packages linked to pousadas), and accessibility to institutions and resources (e.g., ties with research institutes). While the flipside of the coin is that lower-class Pantaneiros find job opportunities in the sector, it is important to stress that the set-up perpetuates skewed power structures and social disparities. Others have observed strong divides between various stakeholder groups [58,69] and the tourist sector does not differ in that respect. Moreover, our results have provided circumstantial support for the notion that "it is technically difficult and potentially politically disadvantageous for local authorities to deal with the poorer sub-groups of the Pantanal" [73] (p. 41). Indeed, the position of the poorer segments of the inhabitants of the Pantanal support the notion that the end of colonialism does not equal to the end of coloniality, and that changes proposed in the name of modernization, economy, and progress may often promote "the reproduction of a modern-colonial world model" [70] (p. 105) (see also [81]).

Table 2. Three myths and debunked myths (including representations) of the Transpantaneira Pantanal.

The Myth	The Debunked Myth
The Uncivilised	
• Pure nature, biodiversity hotspot • Nature easily accessible • Unspoiled nature images disseminated through ICTs • ICTs enable tourist sector to self-organise and self-regulate • ICTs enable tourists to embed local experiences in global social networks	• Tourists engage highly selective view of dry Pantanal (perpetuated by digital imagery) • Nature experience orchestrated by English speaking guides • Strong focus on charismatic animals • Habituated jaguar population • Radio contact between guides to coordinate wildlife sightings
The Unrestrained	
• Luxurious type of nature-based tourism • Sector revolving around tourist satisfaction • Emphasis on comfort over adventure • Animals sightings handed 'on a plate'	• Recreation and tourism tied to specific social contexts • Nature-based tourism revolves primarily around rich foreign tourists • Lack of government support to aid the tourist sector feeding into a need for self-sufficiency in a 'land without law' • Growth of tourism puts pressure on social-ecological system (e.g., infrastructure development, lack of good staff, lack of trained guides, disturbance of wild animals).
The Unchanged	
• Representations of Pantaneiros as mystical background figures • Imagery of Pantaneiro cowboys digitally disseminated, foremost by others • Tourists experiencing Pantanal like a *peon* • Pantaneiros are viewed to be resistant to change, and to have remained unchanged for centuries • Pantaneiros represented as belonging foremost to nature	• Pantaneiro relationships with their environment is not necessarily harmonious • Impact of cattle on the landscape not widely acknowledged • Pantaneiro communities are not static • Growing unease with the marginal position of Pantaneiros in the social-ecological system

Thirdly, regarding the three myths, the digital is employed to enforce existing (analogue) representations. This is in line with the remit of digitalizing tourism marketing [34,36]. Importantly, the interviews show that social media and networks have halted the monopolies on information transmission. However, they reinforce oligopolies, in which a limited number of stakeholders dominate the economy of a diverse social-ecological system. An ironic element in this is that the crafted representations (cf. [46]) are far removed from the social hardships for the Pantaneiros to which this upmarket form of nature-based tourism feeds into. As several scholars have shown, digital imagery has become central to communication in human-environmental relationships [34,42,43], and is an important component of further interweaving between nature conservation and capitalism [44,82]. Our case gives substance to these notions and illustrates how they can play out in the realm of nature-based tourism.

Fourthly, our results denote a narrow focus on biodiversity that goes hand in hand with superficial cultural imagery in generalised representations. Unfortunately, this does no justice to complex interactions between the Pantaneiros and the Pantanal that together form the playing field for nature-based tourism (Table 3). The fundamental issue seems to be that the Pantanal is regarded by many interviewed stakeholders as a biodiverse ecosystem, as opposed to a bioculturally diverse ecosystem. In the former, the Pantaneiros are portrayed as a 'natural' component, in the latter as a 'human' component. Interviewees did occasionally mention the position of local communities in the landscape, and they referred to several relationships, but according to our analysis the emerged tourist

economy has been doing a poor job of recognising and integrating these relationships. The Pantanal is a bioculturally diverse mosaic landscape (cf. [76]), yet the people who have shaped it, who live in it year-round, who are most thoroughly connected with it, and who derive a regional identity from it, do not feature justly in (digital) myths that underpin the tourist sector.

Table 3. Summary of interactions of the Pantaneiros with the Pantanal and connections to tourism.

Interactions Pantaneiros with the Pantanal	Connections to Tourism
Pantaneiros derive their identity in part from a ranching culture, from which nature-based tourism has evolved.	Reference to these historical roots are by and large ignored in the majority of tourism activities, or remain superficial. This may also give a skewed image of the Transpantaneira region. The latter only forms a tiny slice of the entire Pantanal in which ranching is still the dominant form of land use.
Internet access is limited in the Pantanal; a prerogative of those who can afford it. Exponents of digital representations (e.g., WhatsApp groups, *pousada* websites) denote specific relationships of well-off social groups with the Pantanal.	Digital interactions and cyberinfrastructures are controlled by powerful stakeholders. Poorer Pantaneiro communities are ill-represented in digital representations offered to tourists.
Many powerful stakeholders in the tourism sector, such as *pousada* owners, managers, and guides are highly educated and interact with scientists' environmental regulators, and (international) NGOs.	Nature-based tourism along the Transpantaneira has popular-scientific associations focussed on species identification and distributions (and sometimes feeds into scientific research through citizen science apps).
The presence of cattle in the vicinity of *pousadas* and trails result in halted stages of natural succession.	The open landscape as a result of cattle grazing facilitates wildlife sighting.
Tourism supporting staff often hold traditional ecological knowledge of the Pantanal landscape, and particular views on management.	Given the marginal position of supporting staff, such knowledge and views are poorly represented and not reproduced through tourist activities.
Peons are accused of illegally persecuting various animal species including jaguar and armadillo. Still, the current condition of the Pantanal may in part be due to the centuries long, relatively low impact ranching.	Killing of animals may reduce density and visibility of species for which tourists pay to see them. However, generally, there is little (scientific) understanding of the role of the Pantaneiros in the ecology of the area, or room for alternative views on natural resource management.

5. Conclusions and Recommendations: Towards (Digital) Representations of a Bioculturally Diverse Pantanal

We studied nature-based tourism in the Brazilian Pantanal floodplain in the context of biocultural diversity conservation, indigenous communities and the digital realm, and took a political ecology perspective to examine online and offline representations of biocultural diversity. The development of nature-based tourism for the sustainable future of the Pantanal is arguably crucial. As Girard [58] puts it: "Unlike new modes of beef production, which are unlikely to upset the structure of Pantanal society profoundly, it is quite possible that tourism will. (...) Tourism, as far as sustainability of the Pantanal is concerned, might well be salvation or perdition" (p.). Still, as observed by Cater [28], 'ecotourism' is a Western construct tied up with the paradigm of sustainability. While this analysis had no intention to reconsider the notion of the importance of sustainability, Cater's point does lead to a key question of local stakeholder involvement in governance and decision-making in the Pantanal. Structuring our interview data by means of three online and offline constructed myths (the Uncivilised, the Unrestrained, and the Unchanged), and the subsequent debunking of each myth, has led to the main conclusion that the Pantanal is primarily regarded and approached as a biodiverse ecosystem rather than a bioculturally diverse ecosystem (see also the possible reframing of the three myths into respectively the 'portrayal of biodiversity', 'consumption of biodiversity', and 'decor for the consumption of biodiversity'). Ironically, while the relationships of the local Pantaneiros with their natural environment are intricate and have clear connections to tourism, reference to the Pantaneiro culture are superficial and ephemeral. All emphasis is on what could be summarised as 'the myth of a biodiversity hotspot', in that a very restricted view on local realities is offered by the tourist sector. The sector does not succeed or attempt to integrate other-than-biodiversity values in its engagement

with the social-ecological system, and thereby perpetuates social inequalities and skewed power relationships between stakeholder groups. The people that likely suffer from this are lower-class Pantaneiros—those who generally have the most intimate connection with the area.

Finally, we unfold our recommendations along the following points:

Awareness—it is crucial that all stakeholders in the tourist sector and beyond become better aware of the complex relationships that the Pantaneiros have with their environment. Currently, mono-dimensional representations dominate discourses, some of which are likely to have discriminatory repercussions. While Table 3 provides a summary in the context of (mainly) tourism and ranching, many more relationships from various perspectives could and should be studied and made visible. This explicitly requires more input from scholars with various disciplinary backgrounds, as much of the current international peer-reviewed literature on the Pantanal follows from ecological and hydrological research.

Emancipation (no simple fixes)—to stimulate reproduction of bioculturally diverse representations it is important to look beyond 'fixes' such as the local crafting of souvenirs, the training of peons and other Pantaneiros to become nature guides (including English lessons), and the promotion of local cultural celebrations such as the 'Masquerade Dances' to visitors. While all of these suggestions may well prove to be part of a solution, if implemented solely as such, fundamental power structures and social issues likely remain unaddressed. Moreover, such suggestions may fail to consider what the Pantaneiros themselves want. As goes for many disadvantaged groups, there are few channels that promote participation in the planning of economic or political decision-making. In potential solutions it therefore needs to be considered how the voices of the Pantaneiros can be achieve better representation (cf. [25]). The idea of biocultural design could be appropriate here, as it takes a proactive, participatory approach to biocultural diversity to facilitate self-determination and endogenous innovation [83].

Conceptual shift—it is indeed improbable that there are simple fixes to a situation that harbours path dependencies of coloniality, racism, social exclusion, inequality, monopolies on natural resources—issues to be encountered throughout Brazil. Moreover, the 'underuse' of biocultural values [84] goes hand in hand with a global biodiversity discourse [85] and its associated nature-based tourism, and privileges ecological perspectives over biocultural perspectives. The major contribution of this research on this front, we argue, is a further developed argument for a conceptual shift towards the integration of values relating to biocultural diversity rather than biological diversity solely. Through 'dynamic, pluralistic, partnership-based approaches' [9], a type of bioculturally diverse tourism may be developed that benefits multiple actors that comprise the social-ecological mosaic system of the region, and thereby the environmental sustainability of the region as a whole.

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