Infrastructural arrangements and environmental attitudes in the Austrian Alps

by Marcel El-Metwally

By advertising nature based recreation, companies associated with the winter sport industry are inherently reliant on re-inscribing a dualistic nature/culture opposition. While *nature* is advertised as something 'out there', the practise of nature based recreation, offered by skiing resorts, is excessed in fully regulated human made spaces. By turning an infrastructural lens on the high alpine region, the practical ontologies of human and nonhuman co-creation are examined. While the practise of nature based recreation has positive effects on the environmental attitudes of practitioners, the ecological irony of winter sports tourism is stretched. By employing the techniques of audiovisual research and infrastructural inversion as analytical strategies, the hidden workings of regional infrastructures are explored. By analysing infrastructural changes within and outside the skiing resort Kitzsteinhorn (AT) a correlation between infrastructural arrangements and environmental attitudes was examined.

This is a multimodal thesis submitted in the course of the Master Specialisation in Visual Ethnography at the faculty of Cultural Anthropology and Development Sociology of Leiden University. Its results are presented in the form of this written thesis and an ethnographic short-film *Surfing Frozen Oceans* (26 min.)

Keywords: Nature, Tourism, Eco-politics, Infrastructure, Ontology, Hybrid Spaces

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Introduction

For a long time humans have engaged in '[o]utdoor recreation in natural and semi-natural environments', as for it 'plays a crucial role for physical and mental health and contributes substantially to human well-being' (Schirpke et al. 2018: 336). Richins & Hull (2016, in Schirpke et al. 2018: 336) argue, that 'mountain regions all over the world are attractive destinations for nature-based recreation and tourism due to their appealing landscapes, access to wilderness and wildlife, and opportunities for outdoor recreation activities like hiking, mountain biking, climbing, or skiing'. Through extensive marketing campaigns and mass media images of the environment of the European Alps, outdoor recreation and especially winter sport tourism remains a connotation of luxury and celebrity. Due to this image, the popularity of winter sports tourism seems to increase steadily. However, by being embedded in large mobility networks, the effects of winter sports tourism are a major contributor to anthropogenic global warming. Noticeable, the local population in recent years has observed a change of attitude towards the environment by the visitors to the region. This change of attitude is attributed to a change in infrastructural arrangements throughout the region, transforming the natural landscape in a techno-natural one, or a hybrid space.

French philosopher Bruno Latour (2012) argues in his book 'We've never been modern', that the dichotomy, which modernity has made between 'nature' and 'society' does not hold up. Latour argues that pre-modern communities seem not to have made that fundamental distinction between the both. Therefore, Latour argues that the concept of 'nature', as we know it today in the common sense, is only an artefact of modernist theory. Latour furthermore argues, that in times of global pandemics and climate change, the distinction not only is not valid, but becomes an impossible paradox, as we need to address those issues both on a social as well as technical level at the same time. Even though this dualism between society and nature seems to be inherent to human thinking in the 21st century, by collapsing it, Latour enables us to talk about hybrid forms of society and technology, with the vocabulary of engineering and the vocabulary of social sciences, which in the recent past seemed adversary. Combining those vocabularies enables us to pay attention to the intersections of the human and non-human realm and has enabled us to talk about the infrastructures of social reality. Therefore, nowadays infrastructures in anthropology are less perceived as technological objects alone, but 'built networks that facilitate the flow of goods, people, or ideas and allow for their exchange over space. […] literally providing the undergirding of modern societies' (Larkin 2013: 328).

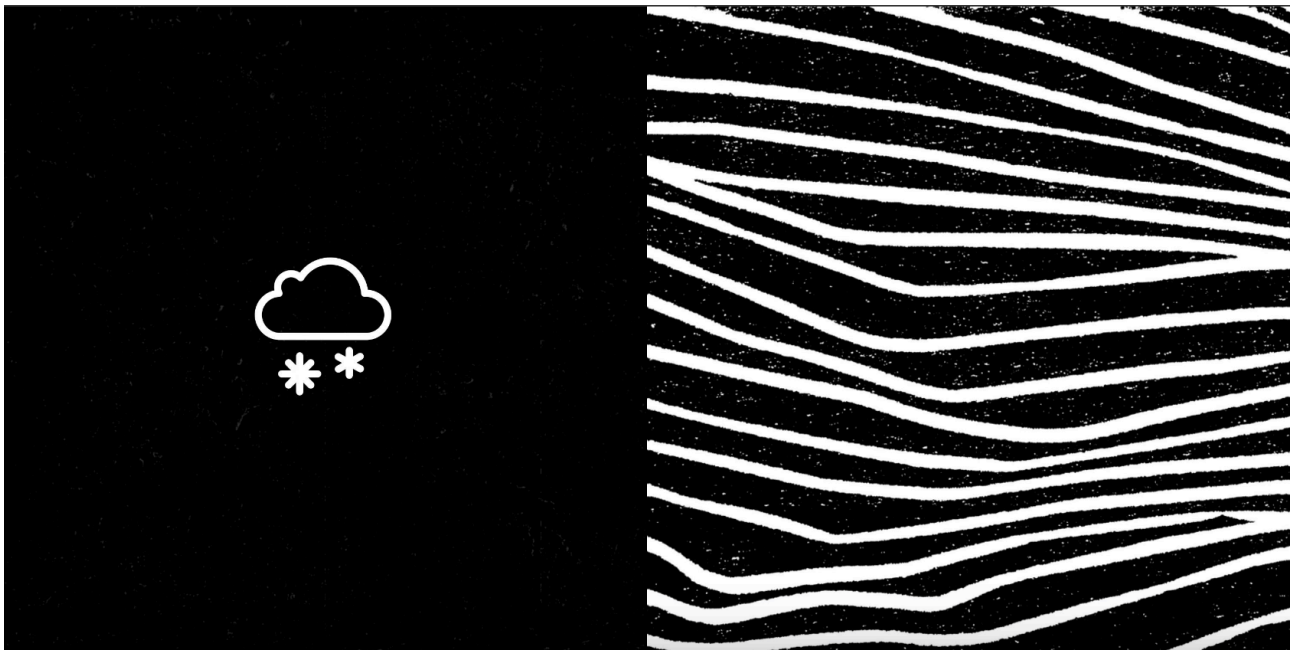
Due to Latour's and similar contributions on the topic of 'technonatural' hybrid systems, 'recent years have seen a veritable explosion in anthropological studies of infrastructures. This emerging body of work has been inspired not least by work in science and technology studies (STS) centring on studies of distributed technological and knowledge systems' (Jensen & Morita, 2017: 617). Therefore, in recent years multiple studies have been conducted on the interrelations of society with entities beyond the human dimension (e.g. the relation between 'people and states (Harvey 2010; Pedersen & Bunkenborg 2012; Reeves 2016), spirits (Ronell 1989; Ishii 2016), forms of knowledge (Jensen & Winthereik 2013; Morita 2013; Walford 2013), and nature (Carse 2012; Morita 2016)' (Jensen & Morita, 2017: 618)). This research is an effort to further study the relations between people and their environment at the case of Kitzsteinhorn glacier resort (Austria). Rather than studying the site of Kitzsteinhorn glacier resort as a space where humans and nonhumans meet, this article intends to examine the relations in-between those actors, examining how the practise of outdoor recreation has produced 'hybrid "actor networks" [of] "naturecultures," or

"technonatures"' into the landscape of the high alpine region (Stoddart, 2012: 4). In order to do so, this article will examine the structures underlying the techno-natural hybrid system of the glacier resort, as for those 'can make explicit usually hidden connections between humans and non-humans' (Jensen & Morita 2016: 739). With 'the boundary between infrastructure and its environment [becoming] increasingly blurred', the method of 'infrastructural inversion as an analytical strategy' is employed, to 'sort[…] out not only the technical relations inherent to the system, but also the relations between these 'components' and their 'environment'' (Jensen 2016; Ishii 2016; Chalfin 2016; Harvey 2016; in Morita, 2017: 740).

The practise of nature based recreation, through exposing practitioners to a natural nonhuman landscape, seems to have a positive effect on the environmental attitudes of practitioners (Stoddart, 2016: 544). Also, when practitioners engage with a semi natural environment it does lead to participants developing certain attitudes about it. Being reliant on a nature/society dualism, companies offering nature based recreation provide spaces, which on the one hand are labelled as *nature*, but on the other hand are fully engineered and do not necessarily resemble a natural landscape. This creates a discrepancy, because visitors think they are *in nature*, while they are in a space, which is fully regulated by humans. Visitors consequentially believe to be engaging with *nature*, while they are not engaging with a natural landscape. Throughout this study it became evident that how people interact with the natural environment clearly is correlated to how and what they perceive as *nature*. This study also revealed that visitors to the Austrian alpine region had fundamentally different understandings of what it meant *to be in nature* and consequently different attitudes and behaviour regarding interaction with natural landscapes.

Even though, '[n]ature-oriented tourism and outdoor recreation are often seen to align with environmentalism, both as a social movement and as a personal worldview' (Stoddart 2016: 544), two different groups of visitors to the region were observed. The casual winter sport tourist, relying on the infrastructures of skiing resorts, and individuals who participate in winter sports as part of their self identity (the seasonal winter sports community in Kaprun). Those groups were identified on the basis of their relation to the nonhuman environment of the Austrian Alps. The casual tourist often is much more concerned with safety issues and spending time with their family, as it often is a family vacation. They are less interested in the actual physical environment of the Alps or the practise of snowsports. With the priority of the casual tourist being safety, he/she is especially reliant on the infrastructures of the skiing resort. The local community however, in contrast to casual tourists, takes serious efforts in studying the natural environment, in order to be able to self-sufficiently move through the landscape.

The discrepancy of the manner of engagement of the two groups, regarding their environment, has consequently led to fundamentally different attitudes about the environment. The practise of outdoor recreation in itself therefore 'should be examined within the context of ecopolitics, a perspective that joins together the microsocial and macro social dimension of environmentalism. These include environmental values, environmentally friendly behaviours, and environmentalist identities, as well as environmental movement political action and debates over ecological sustainability' (Stoddart, 2012: 1). In order 'to avoid the traps of the society–nature and material–discursive binaries' (Wachsmuth 2012; also see Murphy 2004; in Stoddart, 2016: 547), this article will turn an infrastructural lens on the high alpine region, to examine the practical ontologies of human and nonhuman co-creation. At the example of Kitzsteinhorn, this article will explore how the present day techno-natural environment of the high alpine region has been co-constructed by humans and a nonhuman (natural) host environment alike.



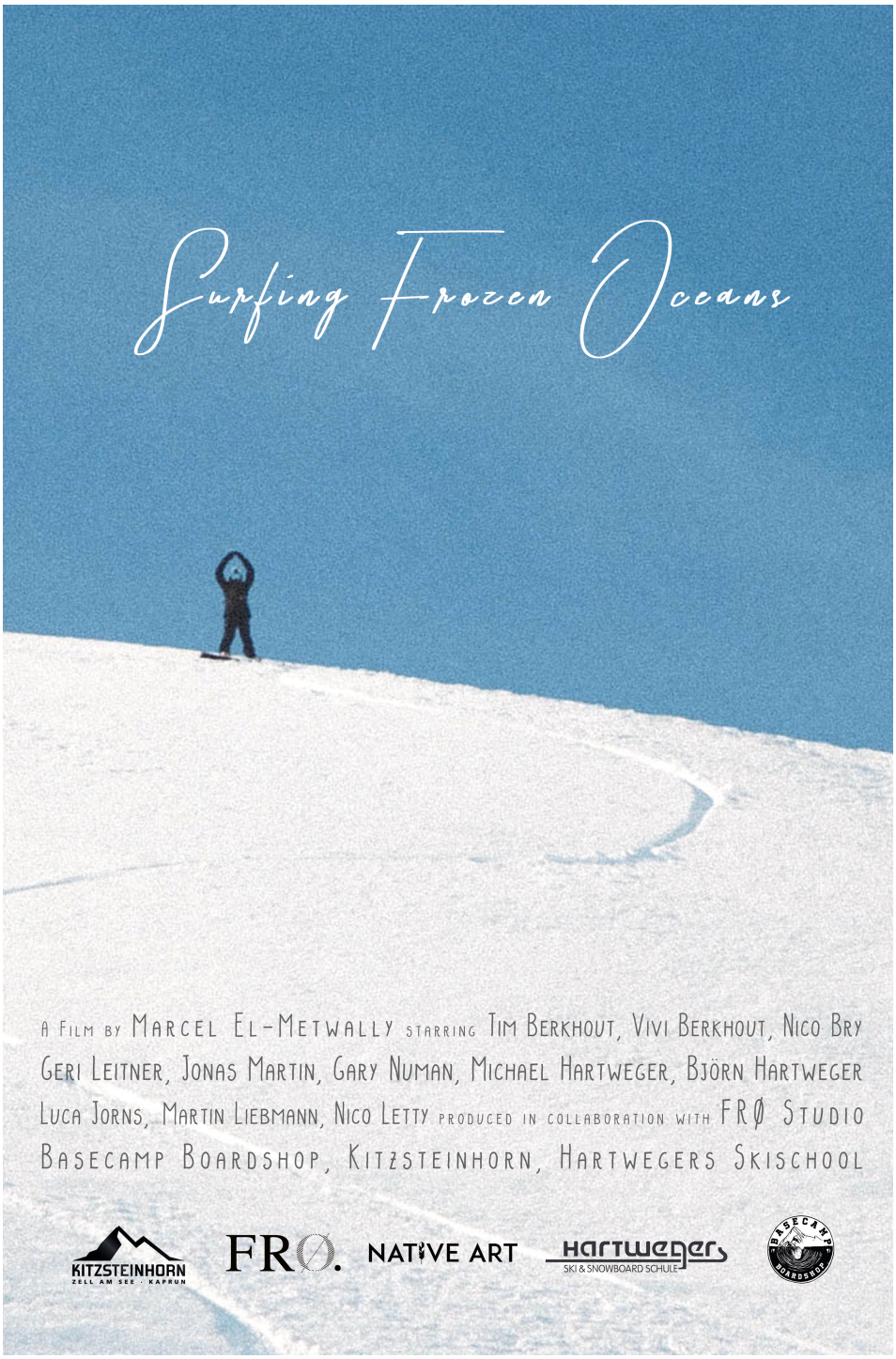
Audio Visual Research

In order to address the underlying structures of our social reality, we first need to be able to study them. Multiple factors seem to influence our perception of infrastructures, most of which seem to have an effect of *cloaking* them from our social realities, moving them to an invisible dimension. However, 'unusual events such as breakdowns and accidents make the workings of infrastructure highly visible to the observer (see Ishii 2016). The science studies scholar Geoffrey C. Bowker calls the analytical strategy that foregrounds such circumstances 'infrastructural inversion'' (Bowker 1994, in Morita, 2017: 740). During my fieldwork I witnessed several such moments of infrastructural inversion, ranging from incidents where the lift was not running to a breakdown of the whole discipline of snowsports, due to a lack of snow. By paying attention to moments of infrastructural inversion I thus tried to pay attention to the hidden connections infrastructures can make. Besides their form (pipes, roads, cables, or digital networks such as the internet), infrastructures also remain a strong connotation to movement and transport (circulation of water, people, goods and ideas). Consequently, when I entered the field, I also gave particular attention to things that move, objects that enable others to move, as well as tracks and traces of movement. Since movement most likely requires an infrastructure to be performed upon, I decided to start by analysing movement in the field. As a camera has the ability to register and capture movement in the representational form of a moving picture, in order to analyse movements in the region, I recorded them. In the process of creating an audiovisual output alongside this written rapport, the technique of montage as analytical tool was employed, in order to 'make present a certain abstinence the invisible ground of the visible world' (Willerslev & Suhr, 2013: 4). This does not mean that montage can reveal something truly invisible, but montage has the power of 'orchestration of different perspectives encroaching upon one another' (Willerslev & Suhr, 2013: 4). Contrasting footage, in the framework of an audiovisual output, has the ability to break the illusion of continuity. Through rupture in continuity, the juxtaposition of such contrasting imagery or sound on the same topic holds the 'power to suggest fresh ways of perceiving relations between artistic expression, scholarly imagination, and social

life' (Willerslev & Suhr, 2013: 1). By using montage to combine different footage into one product, all aspects can be 'seen in relation to one another, [as] the [...] sequences add up to a mosaic image, a phantom-like whole, which enables us to experience and compare each perspective in relation to the others' (Suhr & Willerslev, 2012: 289). An audiovisual output can convey anthropological knowledge in a different language than written one, as on screen film can bring people and culture alive, 'capturing the sensation of living presence, in a way that neither words nor even still photos can' (Barbash et al. 1997: 2). The snowsports community is not only very experienced in the use of audiovisual technology, but it seems that it has even developed its own style of visual representation, a *dialect* in the language of film so to speak. Therefore, when entering the field, I was very much intrigued by the idea of collaborative filmmaking, as 'something essential to the culture emerges out of the collective inspiration' (Rouch in Harrow 2004: 168). Especially within a community which has such a predominant style of visual representation, I was actively engaging with how participants wanted to be portrayed. Not only is the process of image making, as Banks (2001: 112) argues, 'an actively, and perhaps inherently, collaborative project between image maker and image subjects', but the collaborative nature of image-making can also surface valuable ethnographic knowledge in the process. Snow-sport films have very much become part of the sport itself. For many it has even become the ultimate goal, to produce a video part for a snowboarding film. Collaboration in the production process of the output, through employing techniques of film-elicitation, participant feedback and improvised narration, provided 'additional perspectives' (Sjöberg 2008: 233) on the footage shot.

In the process of editing, the footage produced offered valuable new insight. 'Any act of montage is distinctive in that it entails deep tactile, methodological play within form of visual thinking and an artisanal labour or arrangement immersed in materials as and after they are recorded and observed. Concepts, ideas, allusions, and gestures emerge as intellectual "things" in this immersive play' (Marcus, 2013: 304). The editing process therefore not only was a manner of deconstruction and compressing the footage shot, but also served as a mode of analysis, in which conceptual ideas emerged. Also, in the context of analysing the practise of outdoor recreation, in the framework of techno-natural hybrid spaces, the camera becomes yet another part of the equation. Cameras have become as much of a tool to the techno-natural world of Kitzsteinhorn glacier resort as other technologies (e.g. lifts). A technological infrastructure, which partly also is responsible for the increased popularity of winter sports tourism in the last decade. Therefore, attention to the process of image making is equally important as the attention to other technologies, which took part in co-creation the recent day techno-natural hybrid space of Kitzsteinhorn glacier resort. MacDougall (1978: 406) furthermore argues that '[f]ilms are structured works made for presentation to an audience. They make manifest within themselves the analysis that justifies such a presentation. Films are analogous in this sense to an anthropologist's public writings or to any other creative or scholarly productions'. As audio/visual technology not only constitutes a valuable tool for analysis, but also expression of the hidden connections infrastructures can make, through the mode of intellectual montage and juxtaposition, hidden connections can be made explicit. Choosing for a multimodal output of this thesis, its findings are presented in this written article and the complementary ethnographic short-film Surfing Frozen Oceans (26 min.). The short-film constitutes an interplay of academic filmmaking and the predominant style of representation of the snowsports community of the high alpine region.

Watch Surfing Frozen Oceans now at: https://vimeo.com/430148231/61477bb6a6



The Practical Ontology of Infrastructure

When we talk about infrastructure we tend to focus on the objects in which infrastructure manifests in the physical world. However, the concept of infrastructure not only incorporates its objects, but also its connections in between. While, at the same time, '[i]nfrastructures are matter that enable the movement of other matter […] [t]heir peculiar ontology lies in the facts that they are things and also the relation between things' (Larkin, 2013: 329). In this sense an infrastructure, at the same time, is its parts, the connections in between them, as well as the 'assemblages that fulfil technical functions' in a network like structure (Larkin 2015: 1). 'Tying together a wide-ranging set of entities, from organisations and institutions to machines and artefacts, infrastructures are conventionally seen as technical systems 'upon which' various activities are performed. Operating in the background of those activities, they remain largely outside the focus of everyday attention of the actors that rely on them' (Star 1999 in Morita 2017: 739). 'As things they are present to the senses' and yet 'we often see computers not cables, light not electricity, taps and water but not pipes and sewers', a 'duality of infrastructures' which indicates, that 'they operate systemically' and therefore 'cannot be theorized in terms of the object alone' (Larkin, 2013: 329). Therefore in the field of cultural anthropology '[i]nfrastructures have conventionally been viewed as material substrates underlying social action. On this basis, cultural anthropology has engaged infrastructure as vehicles through which political values and symbols are made manifest' (Jensen & Morita, 2017: 615). Infrastructures also have the power to reconfigure both social and political relations, 'in the same process as they reconfigure 'natural environments' (Jensen & Morita, 2017: 615).

Consider, for example, the structure of snow itself. Snow is a structure which occurs naturally, a weather phenomenon. When people first discovered its structural qualities of providing the landscape with a seasonal layer, which has little friction and enables (in combination with the right tools) to move at high speeds, it was recognised as an infrastructure. The earliest examples of skis, used as a mode of transportation, can be found in Scandinavian rock carvings, dating back to around 5000BCE. However, moving on snow has become more than a simple mode of transportation. Since the 19th century it has also become a leisure activity, a sport. People do not just use skis anymore to move from A to B, but for the sake of gliding on the matter of snow itself. In the 20th century this has led to the emergence of a whole subculture of winter sports, with its own dress code, jargon, customs, values and attitudes. In the 21st century, this community has taken a leading role in environmental protection and has taken its stand in debates on anthropogenic global warming. Attitudes about the environment are adopted by practitioners of the sports and can consequently form serious political interventions. However, none of this would have happened if there was no snow in the first place. Rather than being a by-product of the human socio-political dimension, infrastructures co-create it, by taking the form of 'emergent systems that produce novel configurations of the world – new practical ontologies' (Larkin 2013, in Jennsen & Morita 2017: 618). Jensen & Morita (2017: 615, 617) therefore purpose 'a view of infrastructures as experimental systems that integrate a multiplicity of disjunctive elements and spin out new relations between them […] – in processes akin to what Andrew Pickering has described as a 'dance of agency' (1995)'. 'The result [of such a system] is the creation and transformation of different forms of practical, materialized ontologies, which give shape to culture, society, and politics' (Jensen & Morita, 2017: 618). Another example of such an agency of infrastructure can be observed at the infrastructural change that has taken place at Kitzsteinhorn glacier resort, where infrastructural arrangements have created multiple understandings of the concept of *nature.*

The Field

Conducting this research I entered an area, which is known as the *Pinzgau* region. It is a region within the municipality of Salzburg in Austria. The Pinzgau is located within the mountain range of the High Tauern (*German:* Hohe Tauern, *Italian:* Alti Tauri), which forms the main chain of the Central Eastern Alps. In a promotional video of the High Tauern national park, released in 2019, the landscape of the region is described as following:

> A high mountain range of breathtaking wild beauty. The mightiest summits of Austria. The last large glaciers of the eastern Alps. Here the highest waterfalls of Europe are plunging into the deep. Untamed wilderness, everywhere you look. This wild landscape will also show future generations, what nature really is. - *Image film National park High Tauern*[1]

'As eco-political project, nature-oriented tourism may be inherently limited by relying on "out-in-nature" understandings of the environment' (Capek, 2012; in Stoddart: 2016). By advertising nature as something, which lies in rural areas outside of cities, marketing campaigns therefore 're-inscribe dualistic, long-held ways of thinking about "the society-nature opposition"' (Wachsmuth, 2012; in Stoddart 2016: 563). Also, the form of nature based recreation offered by companies within the limits of the High Tauern National Park rarely is taking place in all natural environments, but rather often is exercised in techno-natural hybrid systems. The Pinzgau region provides an excellent field to observe the different effects of infrastructural arrangements on the practise of nature based recreation, as the region is as well a popular destination for casual tourists, as it is for engaged practitioners of snowsports. Within the High Tauern range we can find a mountain called Kitzsteinhorn (3.203m), which is partly covered by a glacier called Schmiedinger Kees. In the realm of natural forces, glaciers have the unique ability to provide cooling of their surrounding all year long. The *everlasting ice* of the Austrian glaciers, even though it's diminishing and melting, does not comply with the rhythm of the season. Even in summer there is snow, because the glacier doesn't simply vanish. This unique quality of glaciers provides a selling point for companies such as skiing resorts, which can use it to offer their guests a 'snow guarantee'. This is also done by the local skiing resort Zell am See / Kaprun, as they state on their website:

> The glacier is the snow guarantee of the whole region. When the conditions are right, the season lasts from the beginning of October till the end of May. The glacier lying underneath the resort constantly cools the snow, which enables skiing nearly all year round. - *Zell am See / Kaprun Website*

Due to this quality of glaciers, providing a snow-guarantee, in the course of the last decades, skiing resorts have been built on all of Austrias glaciers (e.g. Stubai, Hintertux, Mölltal, Dachstein, Sölden, Kaunertal, Pitztal). Kitzsteinhorn in this case proves no exception. Already in the 1960's Kitzsteinhorn glacier resort was a popular destination for winter sports enthusiasts.

[1] https://www.youtube.com/watch?v=qF_PnbgIhgk

In a chronic, summarising the events leading to the establishment of the skiing resort, particular attention is drawn to Wilhelm Fazokas:

> Fate brought Fazokas as a power plant engineer to Kaprun after World War II. Due to his leading qualities, within 15 years, he was promoted chairman of the power plant and was elected mayor of the town Kaprun. When looking at the Schmiedinger Kees one day he had a vision: A snow-secure area, where the Austrian national skiing team could train. One only had to bridge a height difference of 2.100 meters with a lift. When the power plant started to attract visitors to the region, Fazokas calculated that the glacier might also attract skiing tourism, even in summer. Fazokas' vision did not end in a graveyard of illusions, because he was very much supported by politics and media. […] So in 1961 constructions began and the Gletscherbahnen Kaprun AG opened in 1965.
> - *Power of change: 50 years of Gletscherbahnen Kaprun*[2]

Kitz-lift 1965; *Power of change: 50 years of Gletscherbahnen Kaprun*[3]

The natural environment posed challenges nobody had ever engaged with before. Building a lift on a glacial surface, which is ever changing, had never been done before. Challenges were figured out along the way with a pioneering spirit. The Gletscherbahnen Kaprun AG, as social broker, due to its close ties to regional politics, had a major impact on the development of nature based tourism in the region. Promises of profits from tourism were met, as the skiing resort proved to be a huge success. 55 years after its establishment, the

[2] https://www.kitzsteinhorn.at/pdfs/prospekt-download/Sonstige/GBK_Chronik_50Jahre_RZ_72dpi.pdf

[3] ibid.

company and regional politics still have very close ties, with the current CEO of the Gletscherbahnen Kaprun AG, Ing. Norbert Karlsböck—again—being a former mayor of the town. Due to the still increasing visitor numbers the political power invested in the company has not diminished. Furthermore, the increasing number of visitors also has transformed the local economy to a point, where the majority of businesses located within the Pinzgau area is dependent on tourism to the region.

In 2018 the Gletscherbahnen Kaprun AG documented a record number of visitors of around 863.000 guests in a single season. Due to mass media images, the popularity of winter outdoor recreation has increased tremendously in the past years, which also resonates with the experience of the local population. With 43% of global winter sport tourism located in the Alps, they are by far the most popular destination for winter sport enthusiasts. In the season 2019/20 there were new record numbers of visitors (single day) at the regional mountains Kitzsteinhorn (13.000 people on carnival Tuesday, 25/02/20), as well as Schmittenhöhe (17.700 in January). On the 25th of February I met up with Gary Numann on Kitzsteinhorn. She is a seasonaire and has been coming back to Kaprun for the past 3 years. She mentioned to me that she had never seen the skiing resort that crowded: '*It's hard to find snow anywhere today, there are only people. This way, the restaurant's terrace, it's completely gone, only people. The other way, also, no snow, only people. It's extra cosy today*.' Winter sport tourism gets concentrated in high altitude areas, due to the snow line (where precipitation transforms from snow to rain) continuing to rise about 150 meters for every degree the temperature does. Temperatures in the alpine region, according to the organisation Protect Our Winters (POW), have risen by 1.8 degrees celsius since the postindustrial era (1850), with a rate of warming which is nearly 3 times the rate of the global average. Therefore, even in high season (January & February) lower altitude (up till 2000 meters) skiing resorts can not guarantee natural snowfall anymore, which according to POW compose more than 50% of the Austrian skiing resorts. Artificial snowmaking consequentially needs to increase between 100 and 199%, in order to guarantee the same sales. As a reaction to not being able to compete with higher altitude skiing resorts, merger of different resorts often is the easiest way to stay competitive. Merger of skiing resorts enables tourists to go to different areas with the same lift ticket. However, there are major downsides to the merger and expansion of skiing resorts. The enhanced movement to higher altitude areas has the effect that those areas get overcrowded, which in the end decreases the enjoyability of the winter sport experience and increases dangers for collision of individuals. Organisations such as POW therefore advocate structural change in public transport instead of merger and expansion of skiing resorts. To organisations advocating environmental sustainable behaviour, such as POW, infrastructural change seems to be the answer to a sustainable future of the high alpine ecosystem.

Ecological Irony

The relationship between winter sports tourism and global warming presents a prime example of what is referred to as 'ecological irony' (Stoddart, 2011). '[T]he gulf between expressed environmental beliefs, on one hand, and active participation in ecologically destructive practices, on the other. The ski industry and many skiers adopt a generally pro-environmental standpoint' (Fry, 2006; Rockland, 1994; Sachs, 2001-2002; Weiss et al., 1998; in Stoddart, 2011: 19). However, while being embedded in a pro-environmental narrative, winter sports tourism is also embedded within a global mobility network (Larsen et al., 2006; Lassen, 2006; Sheller & Urry, 2006; Urry, 2004), encouraging travel by plane or car. When incorporating global travel to skiing resorts, skiing tourism is a major contributor to global climate change, while the practise of this

seasonal outdoor recreation 'is viewed as particularly vulnerable to its consequences' (Stoddart, 2011: 19). Also, '[t]ourism researchers note the growing significance of tourism that promises active encounters with nonhuman nature, while also promising to be a sustainable form of development for host communities and environments (Franklin, 2003; Bulbeck, 2005; Neves, 2010; Cronin, 2011; Urry and Larsen, 2011; Karlsdottir, 2013; in Stoddart, 2016: 545). Also the Gletscherbahnen Kaprun have acknowledged the importance of sustainability, as stated in a press release on environmental responsibility (April, 2017):

> 'The basis of the company is its unique natural environment all around the Kitzsteinhorn and Maiskogel. The precious natural resources this landscape provides are to be used sustainable and need to be protected as well. Therefore, we work in a close relationship with the Salzburg Institute of ecology, which councils the company in all planning- and construction efforts. In collaboration with a renowned team of experts on the natural environment, an individual high-altitude recultivation and greening project has been developed, which is implemented every year in summer. Deliberate 'Snowfarming and -management' protects not only the ever-changing glacier, but also provides a snow guarantee for a winter sport season of more than 8 months every year. […] Due to glacial retreat since the year 2000, the Kapruner Gletscherbahnen have invested more than 24 million euros into the development of its snow-making machines and the infrastructural system transporting water to the top of the mountain, in order to guarantee the resort's economic competitiveness in the future. The complex snow-making system is fuelled by the water-reservoirs of the Kaprun hydraulic power plant / water reservoir. The power plant in the winter functions as a pumping station. In summer the power plant functions in reverse, as the pump is used as a turbine, using melting waters for energy production. This energy production consequently regenerates the most of the energy used in winter, to pump the water uphill again. […] A free of charge ski-bus service in between Kaprun and Zell am See reduces individual traffic. Since 2007 the company is 'ISO 14001-Environmental management' certified […] and has been awarded numerous awards throughout the years. Already in 2011 Kitzsteinhorn was awarded the „pro natura – pro ski AWARD" at the XI. conference of the Alpine Alliance. Also, Kitzsteinhorn is an 'open air laboratory' of various international research projects.'
> - *Kitzsteinhorn/Gletscherbahnen Kaprun AG press release on environmental responsibility, April 2017*

A significant body of research suggests that nature based tourism can help in forming a heightened sensibility for the environment (Weinberg et al. 2002; Franklin 2003; Coleman 2004; Schrepfer 2005; Laviolette 2006; Wheaton 2007; Gurung and Seeland 2008; Erickson 2013). However, others argue that nature based recreation, due to often taking place in techno-natural hybrid environments, only allows 'to experience and learn about nature within an "ecotourist bubble"' (Carrier and Macleod 2005; in Stoddart, 2016: 563). By engaging with hybrid spaces, we do develop awareness for these spaces, but not for an actual natural environment. When being sold a *nature experience*, through engagement with such hybrid space the visitors' understanding of concepts, such as for example *nature* or *wilderness,* is altered. Therefore, hybrid spaces have the power to influence attitudes in the social, as well as political domain, especially in regard to environmental issues. Mosse and Lewis (2006: 11) stress the agency of social 'brokers' such as Gletscherbahnen Kaprun AG. By analysing 'the ways in which social actors [are] building social, political, and economic roles rather than simply following normative scripts', Mosse and Lewis (2006: 15) introduce

Latour's argument 'that rigid oppositions such as that between context and content or the social and natural worlds are challenged by "chains of translation" that "refer to the work through which actors modify, displace, and translate their various and contradictory interests."' Therefore, Mosse and Lewis (2006: 13; Bierschenk et al. 2002: 13) argue, that '[b]rokers are […] entrepreneurial agents of the "developmentalist configuration", having key institutional positions, albeit unscripted, informal, personalized, and highly unstable ones'. While the company has realised the importance of the sustainability of the natural landscape, it might not have fully realised its socio-political power, which is exercised through the reconstruction of—and integration of infrastructure into—the natural landscape of the high alpine region. A process in which the original landscape is reconstructed into a nonhuman/human hybrid space.

Infrastructural Change

On March 09, 2020 I did an Interview with Michael and Björn Hartweger on the topic of winter sports tourism in the region. The Hartweger family runs a well renowned Ski and Snowboard school in Kaprun and has been following the trends of winter sports tourism for two generations.

> **Michael:** Do you remember in the past? We used to divide the lessons on the basis of 'who was able to take the lift, and who was not'.
> **Björn:** Yes, true. The lifts were so steep at the time, and it was barely more than a rope you could hold onto. And it was going at a high speed as well. You really had to cling onto it and hope for the best. Also, you could not let go, because the lift led right through the forest. If you let go of the rope you'd be in the middle of this forest and had to walk down the whole mountain only to try again. Nobody could reach you then, the teachers couldn't, and you also could not get to the slope. You were on your own then. But those lifts you couldn't imagine today. Something like the Almlift, you couldn't do nowadays anymore.
> **Michael:** People would sue you before they even enter the lift.
> **Björn:** Imagine going with the kids (ski lesson) today.
> **Michael:** If we'd take the kids on such a lift, the office already would get complaints why we're taking such a lift.

Michael and Björn Hartweger describe an infrastructural change of Kitzsteinhorn glacier resort, regarding its lift structures. While in the past they describe the lifts as hard to navigate, requiring skill and experience in use, the infrastructural arrangements, over the years, have changed into very easy to use forms. As reason and/or consequence for this transformation the two describe a change in attitude and mentality towards the natural environment:

> **Michael:** That in the past definitely was different. Nobody expected someone to pick them up. People knew they were on their own, and had to figure out situations on their own.
> **Björn:** Also, back then mobile phones did not exist.
> **Michael:** Nowadays people really don't think it through anymore. They're like 'If somebody's going to take me up there, it's safe, and they will get me downhill as well'.

Furthermore, Michael is describing that the Gletscherbahnen Kaprun AG is following a trend which has emerged in science and technology studies, witnessing 'a research effort seeking to make technology "disappear," for it to become "invisible" or "fade into the background"', in order to achieve a 'complete disappearance of […] technology from a user's consciousness' (Heer & Khooshabeh, 2004: 1). Gletscherbahnen Kaprun AG are following the premises of designing more natural user-interfaces, which are usable more intuitively, and thus do not require any prior knowledge. The easier to use the infrastructures become, the more they will fade out of our consciousness, leaving us with the experience of *pure raw nature,* simply because we forget about the infrastructural arrangements around us, or that's the idea at least. In the case of Kitzsteinhorn glacier resort, Michael and Björn have observed the disappearance of warning signs

and slope rules, which in the past were much more present, in order to convey the dangers of the landscape to tourists, which had no prior knowledge regarding the landscape. Changes, they attribute to the marketing of the tourism industry.

> **Michael:** They removed all the warning signs at Kitzsteinhorn. I remember when we used to go up there, there were big skulls, 1 1/2 meters in size, which showed the dangers of the environment. There were signs with the slope rules at every lift. In the past people knew much better that they were entering an environment which is hostile to humans. Nowadays people don't realise that anymore. Probably because we do not talk about it anymore. Nowadays we only talk about enjoyment. Everything is trimmed for convenience, because, you know, *"we don't want to burden our guests with rules during their vacation"*. The more convenient we keep it, the better the guests feel. But you know, that's the other problem: Because it's so convenient and everything is so easy to use now, we have more weak skiers on the advanced slopes than ever before. People don't think about what they are doing anymore.
> **Björn:** They only think about the selfie they can post, when they are on top of the mountain.
> **Michael:** And nowadays anybody can get up there. Everybody can use a lift. Everybody gets up there, but nobody thinks it through how to get down the slope anymore.

Within the boundaries of a skiing resort, slopes and skiing variants (off-piste routes) are controlled, patrolled and secured against natural hazards. In order to ensure the safety of the visitors to the resort, through minimising the agency of the landscape (e.g. preventing avalanches), the Gletscherbahnen Kaprun AG create a fully controlled safe-space. While the High Tauern are advertised as a *wild landscape showing future generations, what nature really is*, within the skiing resort visitors do not interact with *wilderness* at all. Technological advancement has led to a state where humans are nearly in full control over the landscape. Now visitors are placed within a space, where there is *nothing left to worry about.* This also could explain why the resort does not feel the need anymore to communicate the dangers of the environment to visitors. With no prior experience with mountain regions, visitors are bound to rely on the infrastructures of the skiing resort. As tourists are transported up the mountain effortlessly, they expect to be able to travel downhill even effortlessly. An expectation which people often confronts with the hard truth that going down a mountain requires certain skill and knowledge and still needs to be learned. This, according to Michael and Björn, in the past was a less common expectation of visitors to the region, because ascending the mountain already was a difficult task. Throughout the years Michael and Björn thus have observed visitors developing a

certain detachment from the natural landscape, a phenomenon which they believe to be correlating with the infrastructural changes that have taken place in the region.

Human/Nonhuman Engagement

In contrasts to the casual winter-sport tourists, there are the Freeriding and Touring community. Freeriding is the practise of purposely entering natural terrain (*off-piste* or *the backcountry*). According to Thorpe (2012: 317, 319), Freeriding is 'a good example of a contemporary transnational physical culture', in which 'global connections are being experienced by [skiers and] snowboarders in and across different local, national, and virtual spaces'. Furthermore Thorpe (2012: 318) argues, that the Freeriding community due to 'a historically unique conjuncture of transnational mass communications and corporate sponsors, entertainment industries, and a growing affluent and young population, [has grown] around the world at a phenomenal rate, and far faster than many established sports and physical cultures'. The importance of such a youth culture is not to be underestimated, because 'youth cultures serve as agencies of socialization concerning the political attitudes and civic competences of young people' (Pfaff, 2009: 183). The practise of Freeriding itself revolves around improvisation in creative use of the landscape. While on the slopes of the ski resort, practitioners are presented with a plain (groomed) path, the challenge of Freeriding lies in adapting to the unstructured sometimes real messy and at times also unstable natural environment. Besides Freeriding, which is a mode of descending, there is also the practise of Touring, which is a mode of ascending. In Touring practitioners do not rely on lift structures of the skiing resort, but their own physical strength, in order to walk up mountains. Of course one needs the tools to navigate the infrastructure of snow itself, so the community is by no means denying human made technology and infrastructures. The approach of the community more accurately might be described as '*Bring Your Own Infrastructure'*, or self-sustainable movement. Through not relying on lifts and slopes, practitioners perform an exercised infrastructural inversion in regard to the infrastructures of a skiing resort. The hidden workings and connections that are generally taken granted by the casual tourists are therefore becoming more notable. For example, the expectancy that there always is snow, which is amplified by snow-guarantees of skiing resorts. In a sense through not relying on the infrastructures of the skiing-resort, the impact the climate has on the practise on winter sports becomes much more evident. The climate can present an infrastructural inversion in itself, as both practises Touring and Freeriding are highly dependent on the phenomenon of natural snowfall and also longer periods of low temperatures below zero degree. While within the skiing resort snow cannons are used to compensate, when there is little or no snowfall, the practises of Touring and Freeriding can not be exercised without the climate *playing along.*

The landscape and weather-phenomena need to be acknowledged and taken into account by practitioners, in order to inform their choices in exercising the practises of Touring and Freeriding. Over the past century a vast body of knowledge on the natural environment of the European Alps has been developed by the local population. Practitioners asses the landscape with near scientific accuracy, in order to guide their choices in navigation. The weather- and snow-forecasts, if read correctly, can give an indication of general avalanche danger in the region. On a much more local scale, practitioners occasionally dig a *snow-pit* to accurately analyse the snow-layering of a specific mountainside. In the process, an elaborate classification system is used by the local community. The complexity of this classifications system can be observed at the

sheer number of terms describing different snow phenomena. One of my interlocutors told me that he thought there to be more than 40 different sorts of snow. There is ‘new snow’ (Neuschnee), ‘old snow’ (Altschnee), ‘snowdrift’ (Triebschnee), ‘gliding snow’ (Gleitschnee) and 'wind pressed snow’. There are round- , edgy- and round-edgy snow crystals. There is ‘Reif’, ‘Frost’, ’Graupel’, ‘Filz’ and ‘crusts’. Each sort with its own unique properties. The diversity of terms describing the weather phenomenon of snow thus might be an indicator for the richness of knowledge about it within the Austrian Freeriding community (Boas, 1911). Not only the wide variety of words practitioners have access to, but the ability to differentiate between those sorts of snow, enables practitioners to ‘read’ the terrain in terms of natural hazard management.

While the assessment of the landscape is aimed at preventing avalanches, the gear practitioners carry, is needed when somebody actually ends up in an avalanche. Then, with the GPS transceiver and probe, a person can be located. Also, in recent years, there has been an effort in developing technologies further addressing safety issues of the sport (e.g. avalanche airbags). Practitioners of Touring and Freeriding generally make use of an elaborate toolset, which they carry with them, when entering the backcountry. In both Touring and Freeriding, practitioners usually carry avalanche gear. This commonly consists of a backpack, carrying a probe and a shovel, and a transceiver (worn on the body), which can both send and receive a GPS signal.

Following is a short vignette from my field journal, describing such a *backcountry adventure* with my friend and colleague Tim Berkhout. Tim is working as a shaper at Kitzsteinhorn, maintaining the slopes of the skiing resort. However, he also is an experienced snowboard teacher and guide:

> **March 14, 2020:** It is 6:45 in the morning. Tim is already up, making coffee. I look out of the window and all I can see is thick mist. At first sight it seems discouraging, but I already know that the weather in the valley and the weather up on top Kitzsteinhorn rarely is the same. Mist in the valley actually often is a good sign, that it’s sunny on top, with no clouds at all. ‘Bluebird’ this weather phenomenon is called. Tim is off from work in the morning today, so yesterday we decided to do a split-boarding tour up Tristkogel, which is a summit next to Kitzsteinhorn glacier, within the High Tauern mountain range. I get my phone to check the local weather forecast, while at the same time I ask Tim: “Have you read the avalanche report for today?”. “It’s a ‘3’ today” Tim replies, handing me a cup of coffee. Fifteen minutes later we were fully dressed, in our snow outfits, and had our backpacks packed. We take our equipment downstairs and put them in the car. We arrived at the middle station Langwied (1979 meters) at 8:30. It’s still very quiet up here. Those are the perks of taking an early gondola: The normally overcrowded chairlift at Langwied still is empty and quiet. Our destination is the Tristkogel, a smaller summit at 2642 meters, which means that during our hike we ascend 663 meters in height. We move slowly, one step at a time. It’s a ‘3’ today, which means there is a considered avalanche danger today. The report said something like: *‘The dangers of avalanches in the region is considered. There were snowdrifts overnight due to heavy winds in the high alpine region’*. So, we need to pay attention not to step on packs of snowdrift, as they are known to just break off. It takes us a little less than two hours to reach the summit. In those two hours we barely speak, mostly we’re just listening to the song of the wind. There is no chit chat except for an occasional comment on which direction to walk. You can’t really talk much when you're scaling hundreds of meters in height and the air is

> getting thinner. We reach the summit at around 10:30. And there we are, all alone on top of a mountain. Exhausted. In a sense it's really discomforting: In contrast to the sheer visual beauty of the panorama, looking across the massive summits of the High Tauern range makes you feel very tiny and vulnerable. It is through this discomfort we feel, that landscape really shows off its sublimity. It really gets your adrenaline pumping, even though you're just standing there in silence.

Especially in the landscape of the alpine region, one notices how subordinate humans are to nonhuman actors. When walking up a mountain, the first thing you notice is the physical effort needed, which is often so easily forgotten, when taking a lift. With the engineered stability of the resort also the promise for safety vanishes. Therefore, practitioners have to take up responsibility to deal with the incidental instability of the landscape themselves (manifesting in rock debris, landslides and avalanches). Also, in the backcountry practitioners describe an infrastructural change. However, in contrast to the skiing resort, where the *winter sports experience* has been trimmed to the convenience of the visitors, the infrastructure of natural snow itself has become harder to navigate throughout the years. The community at this point faces the problem, that the backcountry is becoming increasingly physically unstable, due to the effects of anthropogenic global warming, resulting in a rising trend of avalanche fatalities over the past 50 years. As Keiler et al. (2010: 2461) have pointed out, in the Austrian Alps anthropogenic climate change has 'increased [the] frequency and magnitude of natural mountain hazards', and so has consequently the number 'backcountry and off-piste avalanche fatalities within the winter periods 1967/1968–2015/2016' (Pfeifer, Höller & Zeileis 2018: 571). The increasing dangers associated with the practises of Touring and Freeriding make the effects of global warming especially palpable for their practitioners. However, Pfeifer, Höller & Zeileis (2018: 575) argue that the number of fatalities in the Austrian Alps had reached 'its maximum in the winter period 2005/2006' and 'that the number of annual fatalities is slightly decreasing'. This decrease in avalanche fatalities might be due to the knowledge the local population has gathered about their natural environment, the resulting ways of engagement with it, and the development of new technologies (e.g. avalanche airbags).

Towards Ecological Awareness

The disciplines of Touring and Freeriding show up an example of a social reality, where a natural weather phenomenon (snow) turns into an infrastructure in the cultural context of snow sports. In the disciplines, attention to the natural environment is necessary to delimit risks. Emerging from this constant attention to—and dependence on—the environment is an attitude of care for it. As a vast body of literature already has suggested the concept to nature based recreation has an effect of heightening practitioners environmental sensibility (Weinberg et al. 2002; Franklin 2003; Coleman 2004; Schrepfer 2005; Laviolette 2006; Wheaton 2007; Gurung and Seeland 2008; Erickson 2013). However, there seems to be a difference in environmental sensibility between the different visitors to the region. The infrastructural arrangements of the skiing resort seem to have an effect of distancing visitors more and more form awareness for the ecology of the region, while the company itself is advocating environmental sustainable behaviour. However, the message of environmental responsible behaviour, which Gletscherbahnen Kaprun AG is trying to convey, gets lost in *chains of translation.* Visitors, through relying on the infrastructural arrangements of the skiing resort, seem to have very little attention for the actual environment, due to the premises of skiing resorts to minimise the agency of the landscape within the boundaries of the resort, furthermore sustaining an "ecotourist

bubble"' (Carrier and Macleod 2005; in Stoddart, 2016: 563). Infrastructural change often is 'unfolding under the radar of critical social analytical attention' (Bowker & Star 1999; see also Jensen 2010: 119 – 137). However, studying infrastructural change and its ontology 'offers a distinct vantage point for understanding social and political change' (Jensen & Morita, 2017: 617). Also, the fact that infrastructural arrangements in the region have created multiple understandings of 'what nature is', is a political debate in itself. 'Within the growing body of literature often grouped as 'the ontological turn', some have [even] argued that the existence of multiple ontologies is, itself, political', as 'to differ', is 'a political act' in itself (Holbraad et al. 2014; in Littlejohn 2020: 38). Two cases of infrastructural change have been observed: First, a change in lift structures and, second, a change in the infrastructure of snow due to rising temperatures. The first example showed up the extend to which infrastructural arrangements can alter the perception of peoples' surroundings. The second example shows up that snow, just as any other infrastructure needs to be maintained. Although snow cannons can maintain the slopes of the skiing resort, also the Gletscherbahnen Kaprun AG have understood that snow cannons are not the answer to rising temperatures. When addressing global problems, which incorporate as well human as nonhuman actors, eco-political reform is needed and something Anna Tsing (2015: 22) calls 'multispecies world making'. We not only need to pay attention to the structures underlying our social reality, as they have the tendency to hide from our perceptions, but also there is a great need to incorporate nonhuman actors in our world making processes. Regarding all living beings as part of an ecosystem, further 'also moves us into the unexplored territory of modern political economy' (Tsing 2015: 24). 'Collaboration', Tsing (2015: 29) argues, 'is work across difference', and has impact on how sociopolitical attitudes are formed, as '[w]e change through our collaborations both within and across species' (Tsing 2015: 34, 29). In order to engage in a world making process, which incorporates co-creation of multiple species, we first must acknowledge nonhuman agency. Acknowledgement of nonhuman agency is needed to create more sustainable ways of engagement with the natural environment, in order to work towards a sustainable co-existence of humans and nonhuman species.

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