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Science, Knowledge and Belief. On Local Understandings of Weather and Climate Change in Amazonia

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ABSTRACT

This article explores different modes of understanding such atmospheric phenomena that in English are described as ‘weather’ and ‘climate’ applying Norman Fairclough’s critical discourse analysis. In consequence, focus is not on the physical phenomena as such but on ontological differences as reflected in expressions and practices pertaining to indigenous Matsigenka people and migrants from the Andean highlands to the tropical lowlands, centring on their respective interaction both with each other and, more generally, with the social, natural and supernatural dimensions of the environment. Adhering to ideals of modernity and modern science, the Andean migrants employ the climate change discourse as an indication upon social advancement to promote and legitimize their superiority over the allegedly backward and irrational Matsigenka to whom the climate discourse makes little sense. The climate change discourse thus serves here as a means of environmental colonialism in order to turn Matsigenka people into proper citizens.

KEYWORDS Matsigenka; Amazonia; climate change; knowledge; identity

In recent decades, climate change has become an increasingly urgent political issue. Discussion of it has largely been driven by scientists, who have defined both the problem and the means by which to solve or mitigate its effects, both those experienced and those anticipated. However, the wide-ranging repercussions that climate change is having and will have on human society signify that global warming is not a subject relevant to the natural sciences alone. Because changing weather patterns are expected to destabilise rural livelihood strategies, deepen the fragility of already marginalised peoples and reinforce social and economic inequalities, the social consequences of such change are necessarily an important object of study. Yet, despite this social focus, the physical nature of weather is as a rule taken as given and little attention is paid to local understandings of what is happening and why (cf. Hulme 2009; Peterson & Broad 2009; Crate

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2011). Thus, when Myanna Lahsen (2007: 190) states that ‘science ... is the politics of climate change’ (emphasis in the original), she underscores the modernist character of climate change studies, in that they focus principally on global climate phenomena as best described by modern science, disregarding alternative understandings. Even within the social sciences, disagreements about the nature of weather are in consequence reduced to epistemological discrepancies, without taking serious account of divergent ontological perspectives and associated power relations (cf. Blaser 2013; Kaijser & Kronsell 2014). Science is accordingly endowed with powers that far exceed its explanatory capacity. This in turn raises the question of whether this tendency is inherent in science or flows from its practical, social deployment.

Even though it has been argued within academic circles that modern science is only part of an ontology that cannot claim a favoured position in relation to other ontologies (cf. Latour 1993; Hulme 2009; Sillitoe 2010), many who consider themselves modern conceive of science as a symbol of advancement and sophistication that is unique to modern society. For such people, science constitutes what Giddens (1990) has called an ‘expert system’: that is, without necessarily having a deeper understanding of the matters in question, people place their confidence in the knowledge of scientists. The use of experts, particularly foreign experts, accords with what Fairclough (1995: 102f) describes as the ‘technologization of discourse’, that is, the intervention in discourse by experts authorised from above with the object of constructing hegemonies. The experts’ authority is based not only on their formal expertise in the subject with which they deal, but also on their employment by political or managerial powers. Belief in science’s trustworthiness is accordingly facilitated by two mechanisms, which Michel de Certeau (1984: 185) identifies as science’s claim to speak in the name of the real and in the way this perceived reality organises people’s everyday practice. In short, non-specialists’ acceptance of scientific explanations derives from their trust in science rather than their understanding of it.

Furthermore, an image of the Self as superior to those who do not share the same appreciation of modernity is frequently associated with non-scientists’ acceptance of science and related everyday practices as epitomising the modern. Divergent notions of the world may thus acquire social significance, since they relate not only to different understandings of the world (epistemological differences), but to different worlds (ontological differences), thereby allowing the dominant to disregard alternative perceptions and reduce the Others to victims (cf. IPCC 2007).¹

My current interest is not in the weather as physical phenomenon but in local understandings of it – one modernist and one other-than-modern – and in associated practices. The different notions contained within these understandings are seen as discursive practices. In this, I follow Fairclough (1995: 97), for whom a discourse is simultaneously (a) a text (written or spoken), (b) a discourse practice (including both the production and interpretation of texts) and (c) sociocultural practices associated with the discourse. To avoid simplistic constructivism, these practices are seen within what Ingold (2000: 153) calls a ‘dwelling perspective’, thereby stressing that people are immersed in their life-worlds as an inescapable condition of existence. By treating notions of climate events as discursive, it is possible to focus on usages of knowledge in

interaction with the environment, rather than on physical phenomena. This means that all understandings are taken seriously within their specific frame of understanding of the world. Accordingly, we need to take ontological differences seriously and acknowledge that in given situations, opposed and competing discourses can exist in parallel. Such divergences follow from what Latour (1993) describes as 'The Great Divide', across which new articulations of meaning cannot be negotiated, since there is no system of meaning in common. It is, thus, essential to explore how climate phenomena are interpreted within particular social and historical contexts and how weather changes fit into wider cosmological understandings. In effect, if the truth value is relative, the different understandings of such phenomena become political, since the understandings of them serve to legitimise and promote certain perspectives and practices associated with particular social orders. Thus, differences in understanding become markers of hegemonic relations.

Other-than-modern perspectives are frequently associated with indigenous people who are politically weak and vulnerable to the interests of majority populations. One reason for the indifference towards their perspectives is, arguably, the modernist incomprehension of their ontological standpoints. While most members of modernist society entertain ideas of modern science as a coherent corpus of knowledge that explains the universal laws of Nature, the relational cosmologies fundamental to indigenous people are usually entrenched in the particularities of local life, and negotiated in relation to the environment (cf. Århem 1990; Scott 1996; Bird-David 1999; Descola 2013).

To explore the social consequences of such differences, my ethnographic focus is the Upper Urubamba region of southeastern Peru, where indigenous Matsigenka and migrants from the Andean highlands interact.² The Matsigenka are swidden horticulturalists, and number some 12,000 persons, most of whom live along the Urubamba and Manu rivers in the foothills of the Peruvian Andes. The great majority of Matsigenka live in *Comunidades Nativas* (Native Communities), a type of land reserve introduced by law in 1974 to guarantee peoples of the Peruvian Amazon rights to land in the face of the rapidly increasing migration into the tropical lowlands. In the Amazon lowlands, land was up for grabs since indigenous peoples lacked legally recognised rights to the territories they inhabited. Principally, people from the Andean highlands were attracted to this land, giving rise until the early 1970s to highly skewed land distribution. Although the Matsigenka inhabit the periphery of the tropical rain forest, they conform to the general Amazonian mode of subsistence, relying on a combination of swidden cultivation, hunting, fishing and foraging. Even within the Native Communities, Matsigenka society is atomistic and outspokenly individualistic, with a 'loose' and flexible organisation lacking formal and generally acknowledged experts. The Andean migrants, known locally as *colonos*, have been settling in the area in ever-growing numbers since the mid-1960s and today constitute the majority of the local population. The move to the tropical lowlands is commonly understood by these migrants to be both a result of and cause of their modernisation. Their modernist ambition is clearly evident in their adherence to the logic and values of the market economy, which results in intensive agricultural production. The pro-modernity attitudes among *colono* local authorities have made the region a target for a number of projects reflecting

colono ideas of development, which frequently aim to open up the region to further immigration and exploitation. For the Matsigenka, *colono* settlement in the Urubamba River area has had several negative effects: their subsistence base has shrunk and they have fallen under the migrants' political dominance.

Recent intensification of land exploitation in the region has affected the micro climate (cf. Municipalidad Distrital de Echarate 2012). However, Matsigenka in general do not recognise changes in the climate. This has less to do with their perception of weather conditions than with the lack of concepts of 'weather' and 'climate' in their language. By contrast, most of the *colonos* who descend from the drought-stricken Andean highlands are often conscious of the climate change discourse, and consequently describe their experience of local weather conditions in terms of such change. Knowledge of the ideas about greenhouse effects (cf. Bolin 2009; Carey 2010; Paerregaard 2013) thus sets off a chain reaction, which eventually has social consequences in the remote *montaña*.

In comprehending popular understandings of the threat posed by global warming, the cultural theory of risk has been applied (cf. Rudiak-Gould 2014). According to Douglas and Wildavsky (1982), notions of risk are culturally constituted: that is, an object is, or is not, perceived as constituting a risk depending on the social structure (Skinner 2000: 162). In a critical appraisal of Douglas's and Wildavsky's theory of risk, Boholm (2003) stresses that risks are perceived individually. Thus, risk is not simply a question of either/or, but arises when something personally valued is at stake and entails a state of uncertainty (Boholm 2003: 166). In the present case, issues of risk and value are central, although what Matsigenka and *colono* people consider to be risks differs both between groups and within each group. The differences *within* the groups are largely idiosyncratic, while those *between* groups are basically founded on the groups' different ontological assumptions. The views shared within groups should not be seen as common cultural conceptions, but rather as perspectives emerging from the dominant social and historical conditions that guide the groups in their engagement with the environment. Thus, based on *colono* experiences in the highlands, climate change is a potential risk. However, *colono* belief in expert knowledge and the blessings of modernity make them confident that modern science will resolve the problems, so that no values are at stake and climate change constitutes no threat. For Matsigenka people, climate change is no risk because to them 'climate' is not a meaningful concept. By contrast, Matsigenka people see deforestation as a serious risk to their well-being, while *colonos* see this process as a sign of social progress.

Weather and Climate – Different Perspectives

Phenomena viewed by modern Westerners as meteorological, such as rain, wind, temperature, are in principle perfectly familiar to all people. We are caught up in the flows and fluxes of what Ingold (2011: 96) refers to as a weather-world. While weather is accessible to our senses, when it is described in scientific models, the physical characteristics are taken for granted. Instead, weather events are turned into abstractions produced with the help of instruments and as such, they become 'epistemic hybrids'

(Helmreich 2014: 271). Experiencing climate is harder for individuals, since it is an abstraction based on generalised statistics, and not even the scientific understandings of climate's nature are consistent and uncontested (cf. Hulme 2009). It was only in the mid-1980s that the view of climate as a global system came to be widely accepted.³ This acceptance is associated with the development in the late 1960s of the General Circulation Model which mathematically describes the general circulation of the atmosphere and oceans around a rotating sphere (cf. Miller 2004: 54). Thus, even though climate is inseparable from weather, the perceptions of which are embedded in experiences and understandings of local conditions, the notion of climate change is presented by experts in terms of a globalising discourse.

In contrast to the detached universalism of modernist science, epistemologies endorsed by animists have been described as 'a kind of sensory participation, a coupling of the movement of one's attention to the movement of aspects of the world' (Ingold 1999: S82). Animist epistemologies are thus embedded in the particularities of local life and knowledge is considered to be a system dependent on the knowing subjects. The participatory dimension of 'knowing how', in contrast to 'knowing that', signifies that, instead of referring to abstract models, people fall back on their understandings of well-known phenomena and processes in explaining weather events. Rain, for instance, in modern meteorology, is the build-up of humidity in the air through condensation within clouds to the point where drops of water form and fall to the ground because of their weight. By contrast, to Matsigenka people, precipitation is not a uniform phenomenon, and the various kinds of rain discerned are understood to be formed in different ways by different agents. What meteorology calls 'rain' is commonly produced by the rain spirits, *inkanipiriegí* who live in the world above earth that we see as the clouds. However, what is rain to modern meteorology can also be produced by the *impókiro* spirits who live in the sky above the cloud world and who are visible from earth as the stars. When these spirits urinate, they go out into the forest and relieve themselves, just like humans, and their urine falls to earth as a light drizzle known as *itsini impókiro*, 'the urine of the stars', which is completely harmless. By contrast, the precipitation sent by the demon Ináenka, the mother of disease, causes severe rashes. Ináenka's 'rain' originates underground and is seen first as mist rising towards the sky. This subsequently falls back to earth in the form of rainfall, characteristically at the same time as the sun is shining. The precipitation that Ináenka sends is distinguished as *parienkatagantsi*, 'falling vapour'. *Parienkatagantsi* can be translated into English both as 'to drizzle' and 'to cause an epidemic', which to Matsigenka people is more or less the same thing.

The perceived danger of the coincidence of rain and sunshine apparently neatly fits Douglas's (1991) notion of ritual pollution as being produced by 'matters out of place'. Yet, to Matsigenka people, this coincidence is not conceived as matter out of place. Rather, simultaneous precipitation and sunshine (which is not all that rare in the *montaña*) is a sign of the distinctiveness of *parienkatagantsi* in relation to non-infective rain and proof of the intentional objective behind its appearance.

Although Matsigenka people today may seem to have adopted modern notions about weather phenomena when they speak Spanish, these concepts are largely

incorporated into pre-existing ontological frameworks. The division of the year into one period when it rains much and almost daily, and another when it rains much less and sometimes not for two or three weeks in a row, is today talked about in Spanish as the ‘rainy’ and the ‘dry’ season. The use of these foreign terms has, however, not affected Matsigenka people’s understanding of the periods based on hydrological conditions, rather than the frequency of rain. Accordingly, in Matsigenka, there is a season when there is much water in the rivers (*kimoárini*) and another when there is little or no water in them (*shiriagárini*).

From a modern Western perspective, the Matsigenka terminological focus on the water level in the rivers can be seen as analogous to the rainy and the dry seasons, since in this perspective riverine water levels are largely determined by precipitation: when it rains, the rivers swell and when it does not, they dwindle. To Matsigenka people, the regular recurrence of periods when there is much water in the rivers alternating with periods when there is much less is, however, explained by changes in Meshiáreni, the heavenly section of the cosmic river visible from earth as the Milky Way, which becomes the Urubamba River on earth. These rivers are connected in such a way that when there is much water in Meshiáreni, there is little in earthly rivers, and vice versa. Consequently, rainfall does not cause the water level in rivers to rise. Instead, the frequency of rain is seen as a consequence of the water levels in rivers. When rivers are swollen, it is easier for demons in the subterranean world to enter earth than when the water level is low. Since many demons are associated with rain, their increased prevalence explains the temporal overlap of heavy rains and high water levels. Thus, according to Matsigenka people, it rains more frequently because there is much water in the rivers.

In this way, Matsigenka understandings of atmospheric events generally prioritise the concrete and experiential over the abstract and analytical. Consequently, Matsigenka people do not produce meteorological abstractions of the sort produced by modernist science and there is no notion of ‘climate’ and ‘climate change’. This does not, however, mean that atmospheric conditions are seen as static. On the contrary, Matsigenka people share with other Amazonian peoples notions of a highly unstable and transformative universe. What modern meteorology describes as changes to the weather regime brought about by identified causes are understood by the Matsigenka in terms of their animistic ontology. In myths, for instance, there are accounts of dramatic changes in weather conditions. In keeping with Matsigenka cosmological notions, all of them stress the agential powers behind these processes, as illustrated below.

***The Conflict Between Tiankutsini and Tsimenkoritikaviki*⁴**

Once there were two strong and powerful shamans, Tiankutsini and Tsimenkoritikaviki. The former was associated with the *morekakotatsirira*, the spirits producing lightning, while Tsimenkoritikaviki was associated with the *inkanipiriegi*, the spirits producing ‘ordinary’ rain.

One day, a White man offered Tiankutsini a steel axe in exchange for cloth produced in his household. With this axe, Tiankutsini made a huge swidden. When

Tsimenkoritikaviki saw what Tiankutsini had accomplished, he borrowed the new tool so he could make an equally large swidden. Greatly impressed by the axe, Tsimenkoritikaviki decided to kill Tiankutsini and keep it for himself.

The next morning, Tiankutsini confided to his son he had dreamt that someone was going to kill him. He assured his son that should the assassin succeed, he would go to live among his spirit friends in the sky. After some time, Tsimenkoritikaviki carried out his murderous scheme.

The son buried his father and some days later, he took *ayahuasca* (a psychoactive drug) to visit his father. Tiankutsini told his son that one day he would return to take revenge and when thunder was heard approaching, they would know he was on his way.

Tsimenkoritikaviki also took *ayahuasca* and thus he too knew that Tiankutsini was coming to avenge himself. He felt confident, however, because of the many spirits who supported him. The *inkanipiriegí* spirits were, however, not as courageous as the *mor-ekakotatsirira*, Tiankutsini's allies.

When Tiankutsini returned, the two parties started to fight, an event that people on earth witnessed as an immense thunderstorm. In the afternoon, Tsimenkoritikaviki and all of his allied spirits were dead. Tiankutsini explained to his son that there would be no rain, since the rain spirits had been defeated. Everything was going to burn, for the sun would shine all the time. He advised his son that when the gardens and the forest were dry and the rivers were empty, he should leave the house where his family lived and take them to look for a deep ravine in constant shadow. There he should establish a new home and cultivate the land and he would have enough to feed the household. Within a short time, the drought came, and the entire forest and the rivers dried up. The son of Tiankutsini did as his father had bade him do and together with his family went to live in a deep ravine which the sun did not reach and where the heat was less suffocating.

After a long time, Tiankutsini brought the drought to an end and the rain started to fall anew. The leaves on the trees began to sprout, and the family was able to return to its home. Since then, it has rained regularly.

Even though the moral of this myth⁵ mainly concerns notions of honesty, trustworthiness and filial piety, the myth can also be seen as a parable about White people's influence on Matsigenka society. The White man appears only fleetingly in the narrative, but his role is significant, since it is he who provides the axe that gives rise to the conflict between the two main protagonists. White technology is thus the ultimate cause of both the social disruption and the changing weather conditions described in the story. The narrative can thus be seen as a comment on the Matsigenka people's encounter with White people's technology and its devastating effects on both the moral order and the environment.

Colonos, Knowledge and Modernity

The Upper Urubamba constitutes an ethnic frontier with a complex ethnic composition. Besides the indigenous Matsigenka, there are, as has been noted, a substantial

number of migrants from the neighbouring Andean highlands, as well as a small number of White people (and even fewer of African and Asian descent). In individual cases, the distinctions may be blurred and contested, but locally, these categories are recognised and referred to as *nativos*, *colonos* and *blancos* in Spanish and *matsigenka*, *poñárona* and *wiracocha* in Matsigenka. The great majority of the Andean *colonos* engage in small-scale agriculture. White people are mainly high up in the provincial administration and in health care, in leading positions in major enterprises or are missionaries. Considering their limited number, their local influence is comparatively great, as they frequently represent secular or religious powers. They are locally seen to represent the intellectually and socially advanced and many of them present themselves in this way. In the present context, their principal significance is as role models for the *colonos*.

The *colonos*, who constitute the bulk of the population, are socially the most heterogeneous category. The *colono* identity is not primarily seen as an ethnic category, except in the negative sense of being neither White nor indigenous. Although the overwhelming majority of *colonos* have come down from the neighbouring highlands, where ethnicity is frequently a prominent social marker, the move to Upper Urubamba has meant the substitution of a strong local identity with that of a vaguer national identity, namely 'being Peruvian'. In Upper Urubamba, to be 'Peruvian' can be taken to mean several things, but most importantly, it underscores 'being modern' in contrast to the indigenous Matsigenka. As moderns, the *colonos* feel akin to White people, whom they see as paragons of modernity and whom they aspire to emulate, while they associate Matsigenka people with the non-modern, from which they strive to dissociate themselves. Since their subscription to modern ideas is at least partly a way to differentiate themselves from the indigenous Matsigenka, their adherence to modernity does not necessarily signify complete abandonment of other-than-modern ideas and practices prevalent in many highland communities (cf. Orlove *et al.* 2002; Bolin 2009; Paerregaard 2013). Thus, for instance, when a bottle of beer is opened, a libation to the Andean earth goddess Pachamama is frequently made. Still the image of themselves as modern is commonly expressed in the deprecatory characterisation of Matsigenka people as naïve and gullible.

Associated with the emphasis on 'being Peruvian' is the widespread aspiration to advance socially. Thus, in relation to Matsigenka people, *colonos* often stress their modern outlook and ways of life. Since 'modernity' in the Peruvian *montaña* is often expressed in terms of 'being civilised' (see also Hvalkof 1989; Gow 1991; Killick 2008), an element of superiority is added to the distinctness in relation to indigenous people, who are characterised as being 'uncivilised savages'. Accordingly, *colonos* have described Matsigenka people to me as 'like animals, uncivilised, irresponsible, and just pursuing pleasure and comfort'. By contrast, *colonos* commonly describe themselves as rational and hardworking, and as pursuing goals of personal as well as national progress. They see themselves as part of a national and perhaps global setting, while Matsigenka people are thought of as tied down to their immediate neighbourhood with only a limited understanding of the world.

Since most *colonos* had already been integrated into the market economy before arriving, their agricultural production focuses on commercial crops such as coffee, cacao and fruits. Integration into the market economy also facilitated the acceptance of expert advice and the adoption of new cultivation practices. Some of the Andean migrants are, however, unable to adapt to local conditions and return whence they came. On a few occasions, I have heard *colonos* dismiss such returnees as ‘*pobres indiecitos*’ (poor little Indians), a description that stresses their inability to shift from being a ‘traditional Andean peasant’ to becoming a ‘modern farmer’.

Even though farming is still the single most important source of income, the *colono* economy has become more diversified over time, particularly with the growth of the urban sector. Urban life signifies progress and modernity, and acquiring a house in town (where the overwhelming majority of White people live) is an important step towards improved social standing. Many *colono* families therefore have, in addition to their farms, a house in one of the increasingly important towns and villages, where a family member may have some kind of business or employment.

Another important element in social advancement is education. While Matsigenka people continue for the most part to dedicate themselves to cultivation of the land, *colonos* see themselves as among those who also cultivate the mind and who have started down the road towards social development and upward social mobility. Like *colonos* in other parts of the Peruvian Amazon, the *colonos* of Upper Urubamba view development in terms of the victory of mind and rationality over matter and ignorance (cf. Hvalkof 1989: 134). In conversation, elderly *colonos* often underscore their lack of education as an important factor in their limited social status. Such standing as they have is, they say, the result of hard manual labour and many sacrifices, but these will not take them any further in society. To spare their children the hardship of rough and dirty labour and enable them to advance socially, many parents urge their children to finish secondary school, and support them in doing so, and also urge them, if possible, to pursue a university education.⁶

The value *colonos* place on education accords with the largely implicit distinction they make between ‘knowing how’ and ‘knowing that’, with the latter being considered a more advanced proficiency, closely associated with being modern. An important civil society institution involved in the pursuit of this kind of knowledge is the Parents’ Associations (*Asociaciones de Padres de Familia*), which have been instrumental in establishing many primary and secondary schools in the area (Encinas Martín *et al.*, 2000: 266f). Moreover, satellite branches of Cusco universities have operated in the provincial capital of Quillabamba since 1986 (Encinas Martín *et al.*, 2000: 277ff). They are principally attended by *colono* students from around the province, while Matsigenka people can rarely afford this option and White people prefer to go to universities in Cusco or Lima, which enjoy a higher status. Although few White students are attracted to these local universities, the *colono* students there are the pride of their families, since university knowledge is expert knowledge and lends an aura of superiority to those who partake of it. While almost everyone nowadays can attend primary school and quite a few go on to finish secondary school, only a limited number attend university, with the result that university knowledge is exalted and signifies social distinction. Families with

university-educated members frequently look down on families in which no one aspires to university education, an attitude arguably associated with the *colonos*' hope that the emancipation from hardship promised by modernity is being fulfilled.

More specifically, *colonos* also embrace modern science as representing a kind of absolute truth that to some extent parallels – but does not contradict – religious truth. Their understandings of the scientific may be imprecise, but this does not as a rule diminish *colono* people's confidence in its explanatory and predictive power. On the contrary, like God, science moves in mysterious ways and it is only experts, be they priests or scientists, who have some inkling of how things really work. Several *colonos* to whom I spoke about science humbly admitted their ignorance. What they see as science's enigmatic, not to say abstruse, character is taken as proof of its ability to provide factual descriptions of the world and to predict and plan for developments in the future.

This belief in the infallibility of science was, for instance, demonstrated one night as I and a group of *colonos* watched a TV news report that mentioned the criticism of the Intergovernmental Panel on Climate Change report of 2007. When the news programme finished, I referred to the criticism and was met by a mixture of confusion and disbelief that scientists could disagree. This my co-viewers took to mean that some of the scientists had to be wrong, which, given their faith in science as truth, they found hard to accept. A teacher at the local primary school suggested that the journalist had probably misunderstood or misrepresented the issue, and those present seemed content with this explanation – perhaps because it left their faith in the infallibility of science undisturbed.

The public climate change discourse in which *colonos* participate is principally diffused through the mass media, and the information obtained from them is usually presumed to emanate from science. Thus, when a newspaper article deals with climate change, it is usually taken seriously by *colono* readers, even when it is published in the most vulgar tabloid. The way in which Peruvian mass media cover climate change has attracted little research interest, with the exception of Takahashi (2011) and Takahashi and Meisner (2012). According to them, the predominant sources of information are, contrary to what *colonos* believe, government officials and international organisations, while researchers rank only third as providers of information, accounting for less than one-quarter of the contributions (Takahashi 2011: 551). Moreover, most of the information is derived from foreign sources (Takahashi & Meisner 2012: 438). During the conference of parties (COP) 20, held in Lima in 2014, I followed the coverage in *El Comercio*, the principal national newspaper. Despite much interest in the meeting, the findings of Takahashi and Meisner were confirmed as the overwhelming majority of the articles concerned sayings and doings of government officials and environmental activists. The presentation of climate change in mass media thus becomes part of the cultural hegemony shaping discursive practices and orders (Fairclough 1995: 95) and the reliance on foreign sources underscores the globalising effect of the climate change discourse.

Given their belief in modernist science, the understandings by *colonos* of climate and weather differ radically from that of Matsigenka people. While the latter talk only about

what in a modern Western perspective are ‘weather events’, many *colonos* of the Upper Urubamba are aware of the link between changing weather conditions and the global emission of greenhouse gases. Thus, *colonos* talk not only of weather conditions, but also of climate in describing changing weather patterns. In identifying factors contributing to these changes, many refer to their anthropogenic origin. Commonly, the principal cause singled out is air pollution, which is usually associated with modern industry in the ‘rich and developed world’, that is, Europe and North America. By contrast, the role of the local, large-scale deforestation associated with the modern exploitation of the tropical lowlands is generally seen as insignificant.

Nonetheless, neither industrialisation nor modern society is held to blame for global warming. Arguably, this non-judgemental attitude stems from *colono* people’s view that the local risks associated with climate change are insignificant. This lack of concern about current weather conditions and future climate developments is largely consonant with the belief that science and modernity will redeem people from hardship and misery.

Matsigenka–Colono Relations and the Understanding of Climate Phenomena

Unlike the situation in the Andean highlands, climate conditions in the Upper Urubamba *montaña* are still fairly stable, in the sense that the two main seasons, the rainy and the dry, succeed each other in regular fashion and weather conditions are much as expected. However, given the different ontological foundations of Matsigenka and *colono* understandings of the world, each group relates differently to local weather conditions: whereas modernist *colonos* tend to generalise and stress systemic constancy, their Matsigenka neighbours emphasise the particular and historically contingent.

In conversation, many *colonos* state that global warming is one of the most urgent problems of the time. This opinion stands in stark contrast to the understandings of Matsigenka community members, among whom climate change is viewed as no cause for concern in comparison with the process of deforestation and the associated resource scarcity, issues which bother few *colonos*. Many *colonos* found in the community at the time of the transition from the dry to the rainy season during my last visit spoke of this period as being exceptionally hot, frequently exclaiming that ‘never ever has it been so hot’. Many of these *colonos* have not lived in the Upper Urubamba region for more than a few years, and thus are ill-equipped to make such generalisations. In some cases, the *colonos*’ exclamations are probably no more than expressions of exasperation about the heat of the day. In other instances, however, explicit reference was made to global warming. By contrast, Matsigenka people seemed rather unperturbed by the heat. It was noted that it was not equally hot everywhere in the community. Because of the deforestation and the lack of shade, it was warmer in the ‘village’⁷ where the *colonos* live and work than in the forest, where the overwhelming majority of Matsigenka community members dwell. The different ways in which *colonos* and Matsigenka people relate to weather are thus not merely semantic and sensory, but are also influenced by social practices and habits.

The ways in which experiences of weather phenomena and the environment in general are articulated form, moreover, part of distinctive cosmological understandings. While *colonos* tend to subscribe to the naturalist detachment of Nature from Culture and Society, Nature constitutes to Matsigenka people what Descola (2013: 5) aptly calls ‘a theatre of subtle sociality’ inhabited by natural and supernatural beings, who should be treated with respect to ensure continued well-being. Associated with *colono* people’s esteem for modern science and their understandings of climate change is their deprecation of their indigenous neighbours, whose understandings of weather conditions they consider naïvely irrational. Matsigenka people’s lack of interest in changing weather conditions is taken by *colono* people as proof of their general ignorance, and *colonos* refer to them derogatively as *chunchos*, a designation indicating savagery and backwardness. The acceptance of modernist science as an expert system thus signifies a dichotomisation of knowledge systems into one that is true and all the others that are false. Local ideas about weather and climate change accordingly underscore prevailing structures of social stratification, which, moreover, are associated with different social and cultural perspectives and values.

I have been unable to elicit any Matsigenka opinion on modern science in general. Simultaneously, Western medicine is usually seen as complementing Matsigenka curing practices. Moreover, modern technology is acknowledged as superior, although lately this admiration has been tempered by awareness of the environmental harm (for instance, oil spills and deforestation) it may produce.

The *colonos* living and working in the community are employed either at the health post or as teachers at the local school. As they are ‘educated people’, they have more cultural capital in the eyes of the provincial authorities than the local Matsigenka. In consequence, these authorities are more prone to pay attention to the opinions of the local *colonos* than to those of the Matsigenka. Even though the latter usually have greater local knowledge, their understandings of the world and current problems are inconsistent with the assumptions held by district and provincial administrators.

District authorities that have analysed prevailing climate conditions have concluded that the principal contributor to adverse climate effects is the ‘irrational swidden agriculture’ practised on steep slopes (Municipalidad Distrital de Echarate 2012: 7f). Significantly, this kind of agricultural practice is characteristic of Matsigenka subsistence horticulture (cf. Johnson 1983, 2003; Rosengren 1987, 2004). The irrationality lies not only in the Matsigenka preference for cultivating slopes rather than the level ground along the Urubamba River preferred by *colonos*, but also in the non-commercial multi-cropping practised by them and their conviction that the slopes are less affected by demons than level riverlands, a conviction the *colonos* dismiss as ingenuous and superstitious.

Employing words such as ‘harmful’ and ‘irrational’ in describing the cultivation of slopes, local authorities have elaborated a plan to mitigate the local effects of changing climate based on the suggestions of experts. An important facet in the implementation of this project is workshops and meetings at which local people are to be educated and made aware of the causes of this change (Municipalidad Distrital de Echarate 2012: 31) in the hope that supposedly better practices will be adopted. Their belief in modernity

blinds the authorities to the fact that Matsigenka people have cultivated the steep slopes in this allegedly ‘irrational’ manner for hundreds of years without detriment to the environment, while *colonos*’ cultivation practices have resulted in large-scale deforestation in only a few decades. This partiality is consistent with de Certau’s notion that belief in the truthfulness of science legitimises everyday practices that conform to a vision of modernity based on the values of the market economy and the acceptance of science’ conception of Nature as governed by physical laws. The municipality’s negative view of Matsigenka practices can thus be said to constitute what Viveiros de Castro (2004) describes as equivocation: that is, there is disagreement about, not misunderstanding of, the nature of ‘things’. Consequently, the municipal mitigation project constitutes ‘environmental colonialism’ (Crate & Nuttall 2009: 11), since it attempts to impose one understanding of Nature and how to act in relation to it upon Matsigenka cultivators. The project is, therefore, basically ‘civilisatory’, and intended to make Matsigenka people conform to ‘appropriate social norms’ and to transform them into proper modern citizens (cf. Rubenstein 2001).

Conclusion: Ideas of Knowledge and Social Stratification

By approaching understandings of weather and climate not as autonomous physical phenomena but as discursive practices, has allowed me to take seriously the various points of view expressed locally. As a result, it has been possible to explore ideas about knowledge and relations of intersectionality associated with weather phenomena and how they relate to ontological and epistemological differences and to associated practices and environmental relationships. It has, moreover, allowed me to explore how local ideas about knowledge are employed to legitimise hegemonic relations among groups.

The dichotomisation between, on the one hand, the modern and global and, on the other, the allegedly ‘traditional’ and local produces a fundamental social polarity. In this case, climate change discourse represents the modern by referring to notions that are not only far removed from the experiential reality of local understandings but where notions of modernity are employed to encompass and disempower the local. This effect is produced as the official discourse relies on the image of ‘expert knowledge’, and by which modern science is endorsed politically.

In conclusion, the different ways people talk about ‘weather’ and ‘climate’ in the Upper Urubamba relate not only to sensory perceptions of the world. Given their modernist aspirations, *colono* people largely accept the official climate change discourse even though they may not fully understand it. Their notions of weather and climate have accordingly been affected by their engagement with the environment as influenced by their incorporation into the market economy and its values. To most Matsigenka people, what Westerners talk about as ‘weather’ constitutes aspects of an intersubjective Nature of which humankind is an organic part. Maintaining harmonious relations with the various powers in the environment is consequently essential to a secure and tranquil life. By contrast, *colonos*, through their belief in and understandings of science, see Nature as an object detached from themselves, and capable of being a material asset to be employed in the most lucrative way possible. Moreover, the *colonos*’ subscription

to an expert system of science not only underscores their embrace of modernity and economic rationality, but also buttresses their own sense of supremacy in relation to their Matsigenka neighbours, whom they consider as naïve ignoramus in need of edification.

The distinctive ontological positions also influence the perceptions of risk associated with climate change. Although *colonos* and Matsigenka people seemingly agree that climate change constitutes no threat, their opinions are based on radically different understandings. *Colono* people's perception of no risk principally follows from their commitment to ideas of modernity and science and their faith that these will furnish a solution. This position is obviously associated with the *colono* self-image of being modern, specifically in relation to the Matsigenka people: this self-image is clearly embedded in the local social setting and serves to legitimise group superiority within it. For the Matsigenka, their unconcern about global warming stems from the foreignness of the notions of 'weather' and 'climate' to them. However, although they commonly are unaware of the forest's importance as a carbon sink, Matsigenka people regard the deforestation resulting from intensive land use by *colono* people as harmful to well-being in various ways, ranging from sensory experiences to upsetting the relationship between human and non-human beings. The divergent comprehensions of the world and its conditions are accordingly part of particular historical perspectives associated with specific ontological understandings of existence.

More generally, the modernist definition of climate change as a global phenomenon masks alternative perspectives that challenge Western understandings of the issue. Since indigenous voices provide a counterhegemonic discourse, they are potentially dangerous as they defy modernist understandings not only of meteorology but also of environmental relations, especially the employment of the environment as a utility. These voices are becoming increasingly difficult to disregard as the climate change discourse becomes more complicated and concepts embedded in the dominant global discourse (e.g. the state, modernity, development and Western ways of knowing) are problematised, a situation Blaser (2013: 558) graphically likens to 'the corset dominant categories impose upon radical differences ... exploding at the seams'. Accordingly, the homogenising denomination of the current geological era as the Anthropocene - as stemming from humanity's impact on the climate - is being challenged, since it obscures the primary cause of climate change, namely the modernist ideology of growth and consumerism. As a substitute, Haraway (2015: 160), following Andreas Malm's and Jason Moore's lead, suggests Capitalocene, since the geophysical changes the world is presently experiencing follow from the extraction and use of fossil fuels as a prerequisite to the development of capitalist society.

Notes

1. Differences between indigenous people and modernist NGOs with regard to the comprehensions of Nature was evident during the UN climate conference in Lima in December 2014 (COP 20) where representatives of indigenous organisations rather spoke of the need to defend natural resources than of effects of the processes of global warming.

2. Conventional ethnographic fieldwork has been carried out intermittently in various Matsigenka communities in the Upper Urubamba region since 1979. For the appreciation of weather and climate change, my long acquaintance with the area is crucial. Lately, research has mainly focused on one community with a mixed population where Matsigenka people commonly and customarily live in dispersed households in the forest while the Andean migrants all live in the small nucleated centre. Over the years, I have consorted with *colono* people to the extent that I have obtained familiarity with commonly held ideas and aspirations, particularly among those who live in Matsigenka communities or in their neighbourhood.
3. With the understanding of climate as a global system, changes in the atmosphere became part of international politics and subject to the concern of international institutions. The creation of the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC) are accordingly largely products of the development of this new perspective.
4. This is a highly condensed version of the myth that was told by Mr. Mario Mahuantiari and translated with the help of Mrs. Mirian Piñareal.
5. Matsigenka myths should not be seen as moral lessons. Although moral notions can be elicited from myths, this is principally the result of an analytical exercise on behalf of the anthropologist. To Matsigenka people, moral righteousness is determined by the social effects of acts, it is not transcendentally determined and myths are consequently not objects of moral exegesis (Rosengren 1998, 2000).
6. Schools are important also to Matsigenka people though education is as a rule not as status charged as among *colono* people. In general, Matsigenka people's attitude is more pragmatic and to be able to read, write and do mathematics are often deemed sufficient to manage in their relations with non-indigenous people which are where these skills are most meaningful.
7. Where the school and the health station are located within the community a small nucleated settlement has formed which predominantly is inhabited by *colonos* and commonly referred to as 'the village'.

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