

4

RESEARCHING INEQUALITIES FROM A SOCIO-ECOLOGICAL PERSPECTIVE

Kristina Dietz

Introduction

The implications of the exploitation of the natural environment, utilitarian representations of nature, and processes of (global) environmental change on inequality are significant. In Latin America, social inequalities are historically rooted in highly unequal systems of allocation of land rights and mining rents, which, in the colonial period, emerged in close relationship with racial hierarchies and slave or indentured labor. Currently, growing capital investments in resources such as land, minerals, metals, fossil fuels, or forests contribute to an increase in multiple patterns of inequality. This is the case since property and labor relations, mechanisms of inclusion and exclusion, cultural representations and meanings of nature, and mechanisms of access to and control over nature tend to change (Borras et al. 2012; Baquero-Melo 2014). Finally, adverse effects of global environmental change or environmentally hazardous industrial production often have an uneven effect on societies, thus either reinforcing existing or generating new inequalities along the lines of class, gender, ethnicity, and 'race' (Auyero and Swiston 2008; Carruthers 2008).

Despite such evidence, studies that make a link between the analysis of social inequalities and (global) environmental change and politics, or dominant social practices of nature appropriation, are still incipient in social science research. Most research has focused on socio-economic and political factors, having the nation-state as a unit of analysis, and considering processes of production and reproduction of social inequality synchronically (for a critique, see Boatcă 2011). A number of recent publications have tried to correct this lacuna. Transnational and world-historical approaches underline the importance of overcoming the methodological nationalism in mainstream social theory and also show how inequalities correspond to historical entanglements between the global, national, and local or between different world regions. Articulations of these entanglements are flows of people,

goods, capital, or ideas (Korzeniewicz and Moran 2009; Lillemets 2013). An intersectionality approach highlights the multidimensionality of social inequalities and examines how various axes of stratification, for example, gender, class, 'race,' nation, and ethnicity, are mutually constructed and reinforce one another (Roth 2013).

Independent of these promising relational approaches, relations between forms of social domination and representation of nature and social inequalities remain blind spots in most endeavors of understanding persistent social inequalities. Society-nature relations have been traditionally taken up by other research fields and disciplines such as political geography, political ecology, and environmental justice.

This chapter explores the analytical potentials of conceptual approaches from these fields of research for understanding 'entangled social inequalities,' that is, inequalities that emerge at the intersections "between different regions as well as between diverse social categorisations" (Costa 2011, 16). The aim is threefold: firstly, to identify conceptual approaches from relevant fields that deepen our theoretical understanding of the interdependencies between nature and inequalities; secondly, to develop a conceptual proposal based on these findings; and thirdly, to outline the analytical potential of core categories that prevail in current debates: time, space, and physical materiality. To illustrate how these categories can be applied, I present examples from my own research on struggles over land related to the expansion of palm oil plantations and gold mining in Colombia. I conducted three months of field research on land struggles in 2011 and 2012,¹ and another two months of field research on gold mining in March and September 2015.²

I start out from the assumption that 'nature' (its materiality), or how societies transform and appropriate it as a natural resource or institutions that regulate its accessibility and distribution, affects how social relations of inequality unfold.

The chapter is structured as follows: I start with general reflections on the theoretical foundations and the assumption that only by overcoming the nature-society dualism is it possible to understand how nature interacts with the (re-)production and/or a reduction of unequal power relations. I then proceed to sketch those fields of research that provide crucial insights for a comprehensive understanding of how social nature mediates the production and reproduction of inequalities. The third section represents the core of the chapter, which is grounded in critical theory. I develop a proposal of how to conceptualise the interrelationality of nature and social relations of inequality and discuss core categories of analysis. The chapter concludes with a summary of the conceptual and analytical insights for studying inequalities from a socio-ecological perspective.

Conceptualizing socio-ecological dimensions of inequalities: research fields and theoretical perspectives

A common definition of socio-ecological dimensions of inequalities does not exist, and neither does a consensus on how the relationship between nature and social inequalities can be conceptualized and traced. A cursory review of the existing literature on this topic reveals, first of all, what Fitzsimmons called a "peculiar silence on the

question of (...) nature” (1989, 106)³ in the sociological research on inequalities. One indicator of this lacuna is that nature, ecology, the environment, and its related politics are not identified as important fields, theoretical and methodological challenges of sociological research on inequalities in the era of globalization. This ‘nature/environment forgottenness’ in sociology can be traced back to what Latour (1995) called “epistemic de-hybridization”: a categorical separation in modern thinking since the Enlightenment of fundamentally different ontological spheres: human/non-human, society/nature, culture/nature. This “ontological rupture” (Fitzsimmons 1989, 108) historically marked the division of modern academic disciplines into the natural sciences, responsible for the rationalization of nature through a focus on natural principles and laws, and the social sciences, which focus on the explanation of the social via social categories and concepts. The division of natural and social has led to a modern understanding of society based on a differentiation of nature and a denial of society’s material dependencies. Social progress and modernity were thus equated with social emancipation from nature via domination, simplification, subordination, mastery, and control (cf. Parsons 1975; for a critique, Plumwood 1993). This dominant dualistic reasoning in Western thought has hindered in particular the social sciences from addressing theoretically and methodologically the socio-ecological phenomena of inequality. I argue that only by overcoming this society/nature and culture/nature dualism, we will be able to further understand how nature interacts with the (re-)production of inequalities, without assuming that nature predetermines culture and social relations and processes.

Since the 1970s, the idea of a non-dualistic view on society and nature has received attention by scholars from different disciplines and fields of research. Depending on epistemological interests and ontological understandings of the relations between nature and society—dialectical, hybrid, monist, or holistic—scholars have addressed these relations in different ways. Two fields of research that have provided insights in this respect are political ecology and environmental justice.

Political ecology

The idea of a co-constitution of society and nature is most prominently encapsulated in the field of political ecology. Political ecology is not a theory. It can best be understood as a cross-disciplinary “‘frame of research’ consisting of a more or less diverse set of questions, modes of explanation and methods for analysis” (Martín 2013, 4), which has been nourished by various critical theories, disciplines, and strands of research (cf. Watts and Peet 2004; Robbins 2004; Leff 2006; Perreault et al. 2015). Political ecologists ask how social power relations (such as class, gender, ‘race,’ ethnicity) mediate knowledge about, access to, and control over natural resources.

Over the years, the field has evolved in productive ways. The most prominent examples since the 1970s are neo-Marxian, feminist, and post-structuralist approaches to political ecology.

A neo-Marxian approach in political ecology conceptualizes nature and social inequality in political economic terms, as grounded in the social relations

of capitalist production, distribution, and the international division of labor (cf. Blaikie and Brookfield 1987). In the 1980s, this class-based approach succeeded in moving beyond a solely local analysis of socio-ecological changes by way of linking those changes, for example, land degradation and deforestation, to larger transformations in the global political economy. Drawing on critical theories from development studies (dependency theory, world-system theory), scholars from this line of research started to explain environmental degradation in the Global South as a function of the increased integration of peripheral regions into the global capitalist system. Concepts such as the ‘development of underdevelopment’ (Frank 1969) were applied to problems of resource degradation and complemented by unequal access to and distribution of land or forests (Bunker 1985). Such a view offered a way of making sense “of the power of ‘non-place-based’ forces” (practices of transnational corporations, instruments and functions of the global (financial) market) “over ‘place-based’ activities” (e.g., small-scale agricultural production) (Bryant 2001). Many of the current studies on land grabbing, and commodification of nature, stem from this line of research. Here, David Harvey’s analytical lexicon on the concept of ‘accumulation by dispossession’ (Harvey 2003) is often used to locate place-based struggles around the commodification of nature within the wider scope of recent transformations of global capitalism (Fairhead et al. 2012).

In the 1990s, a feminist political ecology gained currency and aimed both to bridge the initial gender gap in political economy narratives and to counter the gendered binary codifications that link nature and emotions to femininity, and culture and reason to masculinity (Plumwood 1993). A key question asked is: is there a gender dimension to the struggles over “knowledge, power and practice, (...) politics, justice and governance” (Watts 2000, 257) that are related to environmental issues. Agarwal (1998, 212) emphasizes thereby the need to consider gendered socio-nature relations through the lens of class. She argues that poor women in rural areas in the Global South are more often exposed to environmental change and hazards and that this fact is a direct outcome of (international) gendered divisions of labor and gendered environmental roles (cf. Rocheleau et al. 1996). Recently, poststructuralist and performative approaches to feminist theory have inspired new directions in feminist political ecology. These studies have explored how gender and gendered subjectivities are constituted alongside other identities and markers of difference (class, ‘race,’ ethnicity) through the material interaction with and symbolic understandings of nature and changes in the environment. Scholars have examined how symbolic ideas of difference are reproduced and expressed through everyday embodied (materialized) practices (e.g., agro-forestry, food consumption patterns) (cf. Nightingale 2011; Elmhirst 2015).

Parallel with the emergence of a feminist political ecology, a poststructuralist political ecology had gained momentum, mainly promoted by social and cultural anthropologists from different parts of the world. Analyses focused on the micro-dynamics of socio-nature transformation, as well as everyday resistance, subject constructions, and different cultural and discursive articulations, practices, and meanings. The main assumption is that an appreciation of everyday processes that

shape people's lives in relation to nature needs a discursive analysis, since questions of nature and lived reality are inseparable from the ways in which nature and reality are represented (Escobar 1996). A pivotal analytical entry point from an anthropological perspective is the recognition of different notions, cultural visions, and situated forms of knowledge about the material world. There is clearly no singular, unique, or universal concept of nature; there are in fact multiple natures. Concepts, visions, and notions of nature are not static but are themselves the results of particular historical situations and cultural experiences. They coexist, overlap, and are constantly contested, especially in times of ecological crises. Drawing on Foucault's (1978) concept of discourse, these knowledge–power relations have gained particular importance in poststructuralist accounts in political ecology. These scholars thus ask how nature is socially constructed via discourse—and how certain ideas and knowledge about nature, ecology, society, and political economy shape and have shaped the way people/societies perceive and use nature as well as how this perception shapes and has shaped subject and power positions as well as forms of eco-governmentality (Escobar 1996, 2008). Thereby, spatial entanglements (global–local) of knowledge constructions and practices are emphasized. Arturo Escobar (*ibid.*), for example, has shown how specific notions of the environment, such as sustainable development or biodiversity, have been powerfully globalized and in turn have led to the occultation of other notions and forms of knowledge located at the margins of global knowledge production.

Examining the process of normalization of certain forms of knowledge about nature and the environmental crisis is useful for two reasons: firstly, it helps us to understand how new subjectivities are constituted; secondly, it reveals how powerful notions of nature become politically effective across national borders in the way local knowledge and practices are reinterpreted or transformed in the context of the global environmental crisis. In this sense, scholars have critically analysed how local subjectivities have been reconstructed in the context of global conservation and forest policies. Astrid Ulloa (2010) shows, for example, how indigenous people in Colombia were constructed as ecosystem managers or guardians of the forest in the course of a new phase of conservation policies in the 1990s. This, in turn, has contributed to essentialist imaginations of indigeneity based on closeness to nature (*cf.* Agrawal 2005; Latorre 2012).

Environmental justice

Environmental justice as a political claim and research concept emerged at the beginning of the 1980s in the United States as a response to urban social protests by minority communities of color against unequal exposure to environmental hazards and pollution (Szasz and Meuser 1997). Since then, the concept has been adopted in other countries and applied in varying contexts (e.g., Latin America, rural areas) (*cf.* Martínez-Alier 1997; Carruthers 2008; special issue of the journal *Society & Natural Resources*, 21(7), 2008). The underlying assumption of the environmental justice concept is that environmental problems “are never socially neutral any more than

socio-political arguments [and decisions] are ecologically neutral” (Harvey 1993, 25). With this argument, Harvey emphasizes the fact that an unequal socio-spatial distribution of environmental impact is not an apolitical or arbitrary phenomenon. Because of the close links between local movements and research activities, initially researchers in the U.S. looked mostly at ‘race’ as the primary explanatory variable for unequal exposure to environmental risks. The issue was even posed as either ‘race’ or ‘class,’ as if these and other axes of social stratification were mutually exclusive and “compartmentalizable as discrete things” (Szasz and Meuser 1997, 113). This one-dimensional explanation and reification of social categories was later criticized and revised, especially by scholars who took as their point of departure the conviction that social relations like class, gender, and ‘race’ interact in complex ways and it is this very interaction that needs to be understood in order to explain the unequal distribution of environmental hazards and risks (cf. Pulido 1996).

Overall, the literature on environmental justice provides all-encompassing evidence that the distribution of environmental risks and impacts is mediated by underlying socially constructed power asymmetries and inequalities. As repercussions of environmental change fall unevenly along the divisions of wealth/poverty, white/non-white, men/women, power/powerlessness, existing social inequalities are reproduced or exacerbated. The question that remains is: in what ways does this happen?

Recent studies focus more on underlying structural and historically rooted processes that lead to uneven outcomes and the reproduction of inequalities via the transformation of nature. A case in point is the work of Sundberg (2008) who explores the ways in which “race works to organize and rationalize environmental inequality” in Latin America (*ibid.*, 26). Based on examples from the colonial era to the present, she illustrates how systems of racial classification come into being in relation to dominant environmental formations and vice versa. Throughout history, (Western) conceptions of ‘appropriate’ (rational) and ‘inappropriate’ (irrational, barbarian) land use served colonists and elites in Latin America to claim and grab lands for multiple uses they considered ‘legitimate.’ Through such practices, forms of difference (racial identities, class interests, etc.) have been linked to environmental politics and resource management, as much as nature is infused with forms of social difference (Kosek 2006; Moore et al. 2003). These findings are important for furthering our understanding of socio-ecological dimensions of inequality as they show that the ‘environment’ itself is not neutral, but instead racialized, classed, gendered, etc.

Interdependencies of nature and social inequalities— a conceptual proposal grounded in critical theory

The research fields and disciplinary approaches described above share a common ontological vision: a non-dualistic conceptualization of societal nature relations. Rooted in various social theories, they differ in levels and categories of analysis, either highlighting the importance of social structures and social materiality, or the

meanings and representations of identity constructions. These levels and categories interrelate when we want to make sense of societal nature relations; though, the focus primarily depends on the research question. In abstract terms, I nevertheless argue that in order to capture the interdependencies between nature and social inequalities, we need to recognize both materiality and meaning. Therefore, I propose a conceptualization of the nature–inequality nexus grounded in a dialectical understanding of the interaction between the material world (nature) and the social world. Building on historical materialism and on critical theory in the tradition of the Frankfurt School, proponents of a dialectic perspective emphasize that society and nature are ‘constitutively interrelated’ (*vermittelt*) (Görg 2011, 49). Historical materialism is founded on Marx’s ontological principle that humans need to transform (metabolize) nature in order to meet existential needs (Marx 2007 [1867]). As Swyngedouw (2004, 130) puts it,

in order to live, humans transform the world they live in, and this takes place in interaction with others; that is under specific ‘social relations of production’. (...) Both nature and humans, materially and culturally, are profoundly social and historical from the very beginning.

Through the transformation of nature, “both humans and ‘nature’ are changed” (*ibid.*, original emphasis). From this perspective, society, societal development, and subject positions are deeply interwoven by the way in which nature is and has been appropriated, managed, and represented; hence, human history is not independent, but rather is mediated by nature. At the same time, nature is socially constructed in two different but interrelated ways: it is materially produced by economic, technical, and everyday practices and is symbolically and discursively constructed through cultural interpretations, meanings, and ideas (Görg 2011). Nature thus “becomes a socio-physical process infused with political power and cultural meaning” (Swyngedouw 2004, 130; cf. Haraway 1991). Nature becomes social nature. But to take social nature as a point of departure does not mean that nature is social all the way down. Following critical theorists of the ‘older’ Frankfurt School (Horkheimer and Adorno 1988 [1969]), I start from the premise that the materiality of nature as such is a socially produced materiality. Nature is, at the same time, socially produced and productive, meaning that it may indeed structure social action in some way because of its discrete materiality. But only in social practices, particularly in the appropriation of nature, does this materiality become socially and culturally meaningful and productive. Nevertheless, biophysical materials and processes are not infinitely malleable, as nature cannot be appropriated by society arbitrarily. The more society ignores the specific properties of nature’s materiality through endeavors of domination and overexploitation, the more it will be reminded of it through ecological crises. As Castree (2000, 29) states,

created ecosystems, while intentionally and unintentionally produced by capitalism, possess causal powers of their own and take on agency in relation to

the capitalist processes of which they are a medium and outcome. (...) nature may indeed be 'produced' but produced nature, in turn, cannot be exploited indefinitely: it has a materiality which cannot be ignored.

Scholars following the idea of a 'constitutive interrelationality' assume that social relations of power and domination are constitutive for environmental problems; and, in turn, that the way in which nature is appropriated, transformed, and represented is constitutive for the (re)production of social relations of power, domination, and inequality. However, I do not claim that all forms of nature appropriation, representation, and transformation lead to an increase of social inequality. As previously mentioned, humans, in order to satisfy existential needs (alimentation, housing, clothes), need to transform nature. This transformation is always embedded in a variety of social, political, cultural, and economic conditions, procedures and constellations that operate dynamically at and between geographical scales and places. What matters concerning the inequality implications of society-nature interactions are these conditions and constellations, that is, under what premises is nature appropriated, by whom, and for what? Depending on these modalities, practices of nature transformation and cultural representation of nature might both exacerbate *and* reduce effects for social inequalities.

From this ontological foundation the interdependencies between nature and social inequalities can be conceptualized in at least three different but interrelated ways.

First, social inequalities, understood as distances between positions that individuals or groups occupy in contexts of hierarchically structured access to socially relevant goods (income, wealth, and other assets) and power resources (political rights, participation, voice, etc.) (Kreckel 2004, 17), are part and parcel of the multiple phenomena of the ecological crises. This becomes obvious in relation to climate change in at least two ways: inequalities in the creation of the crises, and inequalities in the distribution of its adverse effects. On a global scale, OECD countries still account for more than 40 percent of the total amount of global CO₂ emissions, deriving from a historically rooted interdependency of fossil fuel consumption and capitalist development. On a societal level, the adverse effects of climate change are distributed highly unevenly. However, this unevenness is not an outcome of climate change itself but a function of the complex interrelationship between society and nature. Vulnerability to climate change is decisively shaped by ethnicity, race, class, and gender as well as political decisions regarding access, control, and the different forms of appropriation of nature (cf. Dietz 2011). All this became very obvious when Hurricane Katrina hit New Orleans in 2005. The overlap of class, gender, and race-specific inequalities, in combination with disastrous urban planning, in which the known risks were deliberately accepted, caused an unequal distribution of vulnerability in New Orleans (Katz 2008). Another example that illustrates the vital importance of social inequalities for understanding current ecological crises is knowledge-power asymmetries: those with the power to voice their own interests and whose knowledge is deemed legitimate make decisions over how societies regulate their relations with nature (Ulloa 2012).

Second, nature, and how it is socially produced, known, appropriated, represented, and transformed, constitutes an explanatory variable for the production and reproduction of social inequalities in all dimensions as defined by Therborn (2011, 17f): vital inequalities (socially constructed unequal life chances), existential inequalities (unequal allocations of autonomy and recognition, denial of existential equality), and resource inequalities (unequal distribution of resources to act). Mechanisms through which inequalities are produced and reproduced in the context of nature transformation and environmental change are similar to other contexts: exclusion, hierarchization, concentration, dispossession, privatization, distancing, or exploitation (*ibid.* 19f).

Third, the adverse effects of socially produced environmental changes reinforce existing structures of inequality. Those who are already marginalized in multiple ways (spatially, economically, socially, and politically) are relatively more vulnerable to climate change impacts, to air or water pollution, to health problems, or to land degradation. Beyond this, the material properties of nature (e.g., water, soil composition, nutritive value) may already become operative in processes of appropriation, control, and representation, which in turn may alter social inequalities in its multiple dimensions. From this point of view, negating the materiality of nature through overexploitation and nature domination may not only result in an exacerbation of the ecological crises, but also serve to deepen social inequalities.

Core categories of analysis: time, space, and materiality

From a dialectical perspective, social practices related to nature are to be considered as contingent, historic, and spatio-temporal-specific processes. Thus, in order to understand how global environmental change or new forms of nature valorization influence the way entangled relations of inequality unfold, we need to incorporate a historical analysis. We may examine the historically specific social, political, and economic power constellations across scales that led to the emergence of certain forms of regimes such as labor, land rights, property, and ‘inequality regimes’ (Costa 2011). We may also examine the temporal and spatial entanglements of different imaginaries, notions, and meanings, and forms of knowledge and how these changed over time, why, and with what effects on social inequalities.

We may also explore how globalization and current transformations of the global political economic order lead to a transformation of the spatio-temporal coordinates of nature and society and what this means vis-à-vis ‘entangled inequalities’ (*ibid.*). The mobility of different forms of capital (financial capital, productive capital, and labor) in the era of globalization is often described as a compression of space and time (Harvey 2001). To illustrate the latter, the increase of capital investments in mining in Latin America since the 1990s (cf. Bebbington and Bury 2013) could be understood and analysed as a ‘spatial fix’ or ‘resource fix’ of crisis tendencies of capitalism. Through the term ‘spatial fix,’ David Harvey (*ibid.*) describes a crisis-related spatio-temporal relocation of capital (and labor), which leads to a transformation and/or perpetuation of existing socio-spatial orders and

configurations, for example, in terms of (global) labor relations and access to land, water, and resources, and in terms of the distribution of adverse environmental effects and economic benefits that derive from mining.

Space: why and how it matters

How space becomes meaningful in the regulation of the relationship between nature and society can be traced by referring to scholarly debates that point to space as socially produced and contested. Core categories in these analyses are: *place* (socially constructed locations, “filled up” with meanings) (Massey 2005); *scale* (the vertical dimension of space, socially produced and politically contested) (Swyngedouw 2004); *territory, territorialization* (border demarcations, spatialization of political power) (Vandergeest and Peluso 1995); and *network* (forms of interspatial interconnections between places, things, actors, and institutions) (Castells 1996). To give an example, I will briefly turn to the notion of territory and territorialization. Territorialization can be understood as processes of spatial-administrative re-organisation (Vandergeest and Peluso 1995). Government agents, private companies, landowners, peasants, or indigenous people aim to establish control over natural resources and human beings, within or beyond a state’s territorial borders, thus changing socio-spatial relations of power. Territoriality, Peter Vandergeest and Nancy Peluso argue, is a central element in understanding state-society relations (ibid.). Robert David Sack defines territoriality as “the attempt by an individual or group to affect, influence, or control people, phenomena, and relationships, by delimiting and asserting control over a geographic area” (Sack 1986, 19). Territoriality thus refers to the inclusion and exclusion of people within certain geographic borders. Political rulers territorialize power in order to achieve different goals. Enforcement of taxes and access to valuable natural resources are pivotal. State authority and domination are secured through territorial control, whereby local actors might accept or ignore state practices of territorial control or fight against them.

Current struggles over land in Latin America are not only struggles about access to and control of a material resource, but are most often conflicts over territorial control and processes of territorialization. A case in point is the struggle related to the expansion of oil palm plantations in Colombia (cf. Dietz et al. 2015). The number of oil palm plantations increased greatly after the government of Alvaro Uribe (2002–2010) adopted norms and policies to foster the national production of agro-fuels. While in 2001, oil palms were cultivated on around 160,000ha, this area had almost tripled by the year 2011 to 430,000ha (Fedepalma 2012, 23). These developments must be considered against the backdrop of historically rooted conflicts over land in Colombia and ongoing clashes that are primarily “expressed and conducted as territorial struggles” (Ballvé 2013, 239). As a result of oil palm expansion, in many of these regions the contestation of territorial control emerged via either the violent appropriation of fertile land or the introduction of new private property and labor regimes. The latter, thereby, aims to ‘include’ peasants in the agro-industrial

production pattern of palm oil via ‘strategic alliances.’ Peasant, ‘black,’ or indigenous subjects are thus made into rural entrepreneurs (Cárdenas 2012, 329).

A salient example is the municipality of María la Baja in the Montes de María region in northwestern Colombia (Coronado Delgado and Dietz 2013). Between 2001 and 2010, the area cultivated with palm crops tripled. Previous to this growth of oil palms, María la Baja had suffered from paramilitary violence and mass displacements (cf. Ojeda et al. 2015). When oil palm cultivation was introduced in 2001, a new era of capitalized rural development began that had adverse socio-spatial effects. Peasants possessing small plots of land became strategic, crop-producing allies of the palm oil companies. Those who could not prove legal land titles, were landless, had been formally displaced, or refused to cooperate with the palm oil industry were territorially excluded. In many communities, communal roads became impassable for local residents because of palm cultivation, cattle that had crossed palm cultivation areas disappeared or had been found dead, and trees and bushes from neighboring areas that hindered the undisturbed development of palm trees had been cut (ibid.). The examples show how the expansion of palm oil plantations in María la Baja was accompanied by strategies of territorialization (claiming buffer zones, introduction of private property rights, fencing of plantations, employment of armed guards to secure property boundaries, etc.) to prevent ‘others’ from trespassing or from producing other types of crops, thus securing control over land use, economic gains, and political power.

Materiality: why and how the matter matters

Leal and Van Ausdal (2013, 22), in their publication on the environmental histories of the Pacific and Caribbean coasts of Colombia, conclude that “while environmental conditions did not determine the divergent histories, they did shape what was feasible in each place.” But how does this happen? How does nature, or the non-human world, become productive in social history and in the (re-)production of social inequalities? Some answers to this question have already been provided: inequality of access, power-knowledge asymmetries related to nature, etc. But others remain open. Does the specific materiality of nature make a difference in the deployment of how humans control, appropriate, or access it? Does nature’s materiality make a difference in relation to how social configurations unfold? In other words, can agency be attributed to nature independent of its social context? Those questions are at the center of current debates within the disciplines of geography, political economy, and anthropology (cf. Richardson and Weszkalnys 2014; Bridge 2008; Moore 2015). Against the backdrop of these debates, the following paragraph aims at providing some preliminary theoretical and conceptual reflections on the physical materiality of nature in relation to social inequalities.

Materiality as a concept is nothing new to social theory, especially not in the Marxist tradition. Here, the notion of materiality refers to *social forms* like the state form, that is, social relations to a certain degree have become independent of the multiple actions of individuals and groups and, in turn, orient these actions in a way

that enables the reproduction of capitalist societies despite their inherent contradictoriness (Wissen 2015). But following the critical theoretical argument of a ‘constitutive interrelationality’ between nature and society, I argue that an engagement with materiality can provide a productive way of interrogating persistent questions about the relationship between physical nature (both animate ‘nature’ and inanimate ‘things’ or resources) and social relations of inequality. However, this is not an easy or an unproblematic task since it “raises spectres of worn out dualisms, (...) object fetishism and environmental determinism” (Bakker and Bridge 2006, 8). So the question is: how to express the causal role of a material nature without stepping into the naturalism trap? To provide a possible answer, I suggest a non-essentialist concept of materiality, arguing both against the deterministic idea of nature as an external ‘thing’ that determines social processes and against purely constructivist approaches that reflexively deny any autonomous materiality of nature.

What does this all mean for studying the nature-social inequality nexus in Latin America from a transregional perspective? First of all, it means that “things other than humans make a difference in the way social relations unfold” (*ibid.*, 17f). Starting from this assumption, the analysis must focus on the productive capacities of different materialities. This can happen in the following ways: by structuring global production networks to a certain extent (Bridge 2008), by filling them with meaning, by connecting materialities to production and consumption in specific ways across time and space in processes of valuation (Boyer 2015), or by restructuring access to and control over nature. Take, for example, the materiality of the oil palm fruit. The fact that the fatty acid of the oil palm fruit starts dissolving between 12 and 24 hours after the fruit is harvested leads to the creation of specific agro-industrial palm oil landscapes in order to ensure processing shortly after harvest, with mills that run 24 hours a day and that are surrounded by large plantations. Dietz et al. (2015) demonstrate how the oil palm’s materiality matters in valuation processes in the way landscapes are being transformed, including patterns of land use and rural infrastructures. These transformations have challenged and reconfigured patterns of access to and control over land in the recent past, leading to new forms of inclusion and exclusion.

Another case of how the materiality of a resource can influence the (re-)production of social inequalities is gold mining. I will briefly turn to the gold mining boom that has been taking place since the late 1990s in Colombia. This boom is due to several factors: a neoliberal reform of the mining sector, technological innovations, high commodity prices, and an increased global demand for gold for industrial production, for jewelry, and as value reserve. Manifestations of the 21st-century gold boom are manifold: an increase of assigned mining titles and concessions, the expansion of mining sites into areas hitherto sparsely opened up for mining, an increase in foreign capital investments in gold mining, and an increase in ore production. According to national statistics, annual gold production grew between 2009 and 2013 from 48 tonnes (t) to 55.7t, with a peak in 2012 of 66t (UPME 2014, 45), rendering Colombia the 15th most important gold producer in the world (Acquatella et al. 2013, 88).

Peter Dicken (2015) has formulated a general material-spatial characteristic of metals and minerals and notes that “they are *locationally specific*. They are where they are (ibid., 244, original emphasis). This means that minerals and metals, as well as mining itself, are “far from footloose” (Bebbington and Bury 2013, 11), but socio-culturally embedded. The question of how patterns of unequal social relations change in relation to valuation processes of metals is therefore a place-based question. Context-specific political and economic structures, gender relations, social group relations, and cultural identities and practices as well as actor-constellations all influence processes of reconfiguring social relations that are related to mining. The fixed spatial location becomes meaningful in its interaction with social-cultural, historical, and political conditions. This means that asymmetries can increase when context-specific livelihoods are being transformed or destroyed through the displacement of former land uses and users, such as farming, peasants, or artisanal miners; when mining concessions and titles are granted to national or transnational companies, thus leading to exclusive rights to exploit gold in the subsoil and the exclusion of other actors.

Patterns of control and access as well as technical requirements and labor processes of extraction vary depending not only on the horizontal spatial dimension of the materiality of gold, but also its vertical dimension (depth) (cf. Bridge 2013). Socio-spatial reconfigurations related to industrial open-pit gold mining are different from those of small-scale or artisanal alluvial gold mining. They comprise different labor relations, different changes in land ownership, territorial access and control, as well as unequal distributions of adverse ecological effects of cyanidation, all of which have multiple repercussions in creating (unequal) social relations. Referencing ‘the material’ is thus a way of “acknowledging the embeddedness of social action” (Bakker and Bridge 2006, 18), but also its relationality. Nevertheless, acknowledging that materiality makes a difference in the way social relations of inequality unfold means to acknowledge that ‘things,’ whether they are minerals, metals, or plants, “are not pre-given substrates that variably enable [or] constrain social action, but are themselves historical products of material, representational and symbolic practices” specific in time and space (ibid.).

Conclusion

The aim of this chapter was to identify analytical entry points for the study of social inequalities from a socio-ecological perspective. The main goal was to deepen our theoretical understanding of the interdependencies between nature and social inequalities. From a dialectical perspective on societal relations to nature, I identified three interrelated ways of interdependencies between nature and inequalities:

- a social inequalities are inherent elements of current ecological crises;
- b social nature, its domination, transformation, and representation, constitutes an explanatory variable for the production and reproduction of social inequalities in all its dimensions;
- c the materiality of nature can have implications for how social inequalities unfold.

Further, the chapter aimed to develop an improved theoretical and methodological understanding of the relationship between nature and social inequalities by drawing on different fields of research. In environmental justice debates, socio-ecological dimensions of inequality have been conceptualized as facets or moments of social inequality (Szasz and Meuser 1997, 116), meaning that inequality in the distribution of environmental risks “reinforces and, at the same time reflects, other forms of hierarchy and exploitation along lines of class, race and gender” (Newell 2005, 70). Beyond this understanding, the dialectic perspective on society-nature relations suggests that social inequalities are not only considered as a consequence of specific forms of nature transformation, but also as inherent to them. This implies that we need not only to view the nature-inequality nexus from the point of view of unequal distribution of adverse ecological effects, but also that environmental problems and historically specific forms of nature appropriation and/or conservation themselves need to be viewed as articulations of social inequalities. Class, gender, and race are not only reproduced or perpetuated through new forms of nature transformation, but these social categories of differences are already inscribed in the forms and practices through which nature is appropriated, known, conceived, and imagined.

Based on these observations, I conclude that social inequalities emerge not only at the intersections of different regions and diverse social categorizations, but also in societal nature relations. Transnational processes and entanglements have, at least since the era of colonialism, always played a decisive role in shaping societal nature relations in their material and symbolical dimensions (cf. Mintz 2007), both in European and Latin American societies. Finally, what became clear, both from theoretical reflections but also from empirical studies, is that the categories of time, space, and materiality hold analytical promise for studying inequalities from a socio-ecological perspective in greater depth and beyond the confines of the nation-state.

Notes

- 1 The research was supported by the German Federal Ministry of Education and Research (BMBF) as part of the project “Fair Fuels?”
- 2 The research was supported by the German Federal Ministry of Education and Research (BMBF) as part of the project “Global Change—Local Conflicts?”
- 3 In her statement, Fitzsimmons referred to the discipline of human geography.

References

- Acquatella, J., Altomone, H., Arroyo, A. and Larde, J. (2013): “Rentas de recursos naturales no renovables en América Latina y el Caribe: evolución y participación estatal, 1990–2010,” *Serie Seminarios y Conferencias* 72, Santiago de Chile: CEPAL.
- Agarwal, B. (1998): “The gender and environment debate,” in: Keil, R. et al. (ed.): *Political Ecology. Global and Local*, London: Routledge: 193–219.
- Agrawal, A. (2005): *Environmentalism. Technologies of Government and Making of Subjects*, Durham, NC: Duke University Press.
- Auyero, J., and Swiston, D. (2008): “The social production of toxic uncertainty,” *American Sociological Review* 73: 357–379.

- Ballvé, T. (2013): "Territories of life and death on a Colombian frontier," *Antipode* 45 (1): 238–241.
- Bakker, K. and Bridge, G. (2006): "Material worlds? Resource geographies and the 'matter of nature,'" *Progress in Human Geography* 30 (1): 5–27.
- Baquero-Melo, J. (2014): *Layered Inequalities. Land Grabbing, Collective Land Rights and Afro-descendant Resistance in Colombia*, Münster: LIT Verlag.
- Bebbington, A. and Bury, J. (eds.) (2013): *Subterranean Struggles. New Dynamics of Mining, Oil, and Gas in Latin America*, Austin, TX: University of Texas Press.
- Blaikie, P. and Brookfield, H. (1987): *Land Degradation and Society*, London: Methuen.
- Boatcă, M. (2011): *Global Inequalities*. Berlin: desigualdades.net, Working Paper 11.
- Borras, S. M., Franco, J. C., Gómez, S., Kay, C. and Spoor, M. (2012): "Land grabbing in Latin America and the Caribbean," *The Journal of Peasant Studies* 39 (3–4): 845–872.
- Boyer, M. (2015): *Nature Materialities and Economic Valuation. Conceptual Perspectives and their Relevance for the Study of Social Inequalities*, Berlin: desigualdades.net, Working Paper 85.
- Bridge, G. (2008): "Global production networks and the extractive sector: governing resource based development," *Journal of Economic Geography* 8 (3): 389–419.
- Bridge, G. (2013): "Territory, now in 3D!" *Political Geography* 34: 55–57.
- Bryant, R. L. (2001): "Political ecology: a critical agenda for change?" in: Castree, N. and Braun, B. (ed.): *Social Nature. Theory, Practice, and Politics*, Malden, Oxford: Blackwell: 151–169.
- Bunker, S. (1985): *Underdeveloping the Amazon: Extraction, Unequal Exchange, and the Failure of the Modern State*, Urbana, IL: University of Illinois Press.
- Cárdenas, R. (2012): "Green multiculturalism: articulations of ethnic and environmental politics in a Colombian 'black community,'" *The Journal of Peasant Studies* 39 (2): 309–333.
- Carruthers, D. V. (ed.) (2008): *Environmental Justice in Latin America. Problems, Promise, and Practice*, Cambridge, MA; London: MIT Press.
- Castells, M. (1996): *The Rise of the Network Society*, Oxford: Blackwell.
- Castree, N. (2000): "Marxism and the Production of Nature," *Capital and Class* 24 (3): 5–36.
- Coronado Delgado, S. and Dietz, K. (2013): "Controlando territorios, reestructurando relaciones socio-ecológicas: la globalización de agrocombustibles y sus efectos locales, el caso de Montes de María en Colombia," *Iberoamericana* 49: 93–116.
- Costa, S. (2011): *Researching Entangled Inequalities in Latin America. The Role of Historical, Social, and Transregional Interdependencies*, Berlin: desigualdades.net, Working Paper 9.
- Dicken, P. (2015): *Global Shift: Mapping the Changing Contours of the World Economy*, London: Sage.
- Dietz, K. (2011): *Der Klimawandel als Demokratiefrage. Sozial-ökologische und politische Dimensionen von Vulnerabilität in Nicaragua und Tansania*, Münster: Westfälisches Dampfboot.
- Dietz, K., Engels, B. and Pye, O. (2015): "Territoriality, scale and networks: the spatial dynamics of agrofuels," in: Dietz, K. et al. (eds.): *The Political Ecology of Agrofuels*. London: Routledge: 34–52.
- Elmhirst, R. (2015): "Feminist political ecology," in: Perreault, T. et al. (eds.): *The Routledge Handbook of Political Ecology*, London: Routledge: 519–530.
- Escobar, A. (1996): "Construction Nature. Elements for a post-structuralist political ecology," *Futures* 28 (4): 325–343.
- Escobar, A. (2008): *Territories of Difference. Place, Movements, Life, Redes*, Durham, NC: Duke University Press.
- Fairhead, J., Leach, M. and Scoones, I. (2012): "Green grabbing: a new appropriation of nature?" *Journal of Peasant Studies* 39 (2): 237–261.
- Fedepalma (2012): *Anuario Estadístico. La agroindustria de la palma de aceite en Colombia y en el mundo, 2007–2011*, Bogotá: Fedepalma.

- Fitzsimmons, M. (1989): "The Matter of Nature," *Antipode* 21 (2): 106–120.
- Foucault, M. (1978): *Dispositive der Macht. Über Sexualität, Wissen und Wahrheit*, Berlin: Merve.
- Frank, A. G. (1969): "Die Entwicklung der Unterentwicklung," in: Echeverria, B. and Kurnitzky, H. (eds.): *Kritik des Bürgerlichen Anti-Imperialismus*. Berlin: Wagenbach: 30–45.
- Görg, C. (2011): "Societal relationship with nature: a dialectical approach to environmental politics," in: Biro, Andrew (ed.): *Critical Ecologies. The Frankfurt School and Contemporary Environmental Crises*, Toronto: University of Toronto Press: 43–72.
- Haraway, D. (1991): *Simians, Cyborgs and Women: The Reinvention of Nature*, London: Free Association Books.
- Harvey, D. (1993): "The Nature of Environment: The Dialectics of Social and Environmental Change," *Socialist Register*, 29: 1–51.
- Harvey, D. (2001): "Globalization and the 'Spatial Fix,'" *Geographische Revue* 3 (2): 23–30.
- Harvey, D. (2003): *The New Imperialism*, Oxford: Oxford University Press.
- Horkheimer, M. and Adorno, T. W. (1988 [1969]): *Dialektik der Aufklärung. Philosophische Fragmente*, Frankfurt am Main: Fischer.
- Katz, C. (2008): "Bad elements: Katrina and the sourced landscape of social reproduction," *Gender, Place & Culture. A Journal of Feminist Geography* 15 (1): 15–29.
- Korzeniewicz, R. P., Moran, T. P. (2009): *Unveiling Inequality: A World-Historical Perspective*, New York, NY: The Russel Sage Foundation.
- Kosek, J. (2006): *Understories: The Political Life of Forests in Northern New Mexico*, Durham, NC: Duke University Press.
- Kreckel, R. (2004): *Politische Soziologie der sozialen Ungleichheit*, Frankfurt am Main: Campus.
- Latorre, S. (2012): *Territorialities of Power in the Ecuadorian Coast. The Politics of an Environmentally Dispossessed Group*, Berlin: designALdades.net, Working Paper 23.
- Latour, B. (1995): *Wir sind nie modern gewesen. Versuch einer symmetrischen Anthropologie*, Berlin: Akademie.
- Leal, C. and Van Ausdal, S. (2013): *Landscapes of Freedom and Inequality: Environmental Histories of the Pacific and Caribbean Coasts of Colombia*. Berlin: designALdades.net, Working Paper 58.
- Leff, E. (2006): "La ecología política en América Latina. Un campo en construcción," in: Alimonda, H. (ed.): *Los Tormentos de la Materia. Aportes para una ecología política latinoamericana*, Buenos Aires: CLACSO: pp. 21–39.
- Lillemets, K. (2013): *Global Social Inequalities. Review Essay*, Berlin: designALdades.net, Working Paper 45.
- Martín, F. (2013): *Latin American Political Ecology and the World Ecological Crisis. Recent developments, contributions and dialogues with the Global Field*, paper presented at the 8th Pan-European Conference on International Relations, 18–21 September, 2013, Warsaw.
- Martínez-Alier, J. (1997): "Conflictos de distribución ecológica," *Revista Andina* 15 (1): 41–66.
- Marx, K. (2007 [1867]): *Das Kapital. Kritik der politischen Ökonomie*, Berlin: Karl Dietz Verlag, Vol. 1.
- Massey, D. (2005): *For Space*, London: Sage.
- Mintz, S. W. (2007): *Die süße Macht. Kulturgeschichte des Zuckers*, Frankfurt am Main: Campus.
- Moore, D. S., Kosek, J. and Pandian, A. (2003): *Race, Nature, and the Politics of Difference*. Durham, NC: Duke University Press.
- Moore, J. W. (2015): "Nature in the limits to capital (and vice versa)," *Radical Philosophy* 193 (Sept/Oct, 2015): 9–19.
- Newell, P. (2005): "Race, class and the global politics of environmental inequality," *Global Environmental Politics* 5 (3): 70–94.
- Nightingale, A. (2011): "Bounding difference: Intersectionality and the material production of gender, caste, class and environment in Nepal," *Geoforum* 42: 153–162.

- Ojeda, D., Petzl, J., Quiroga, C., Rodríguez, A. C. and Guillermo Rojas, J. (2015): "Paisajes del despojo cotidiano: acaparamiento de tierra y agua en Montes de María," *Revista de Estudios Sociales*, 54: 107–119.
- Parsons, T. (1975): *Gesellschaften. Evolutionäre und komparative Perspektiven*, Frankfurt am Main: Suhrkamp Verlag.
- Perreault, T., Bridge, G. and McCarthy, J. (eds.) (2015): *The Routledge Handbook of Political Ecology*, London: Routledge.
- Plumwood, V. (1993): "Nature, self, and gender: feminism, environmental philosophy and the critique of rationalism," In: Zimmermann, M. (ed.) *Environmental Philosophy: From Animal Rights to Radical Ecology*, Englewood Cliffs, NJ: Prentice-Hall: 284–309.
- Pulido, L. (1996): "A critical review of the methodology of environmental racism research," *Antipode* 28 (2): 142–159.
- Richardson, T. and Weszkalnys, G. (2014): "Resource materialities," *Anthropological Quarterly*, 87 (1): 5–30.
- Robbins, P. (2004): *Political Ecology*, Oxford: Blackwell.
- Rocheleau, D., Thomas-Slayter, B. and Wangari, E. (eds.) (1996): *Feminist Political Ecology: Global Issues and Local Experiences*, London: Routledge.
- Roth, J. (2013): *Entangled Inequalities as Intersectionalities. Towards an Epistemic Sensibilization*, Berlin: desiguALdades.net, Working Paper 43.
- Sack, R. (1986): *Human Territoriality. Its Theory and History*, Cambridge, U.K.: Cambridge University Press.
- Sundberg, J. (2008): "Tracing race: mapping environmental formations in environmental justice research in Latin America," in: Carruthers, D.V. (ed.): *Environmental Justice in Latin America. Problems, Promise, and Practice*, Cambridge, MA: MIT Press, pp. 25–47.
- Swyngedouw, E. (2004): "Scaled geographies: nature, place, and the politics of scale," in: Sheppard, E. and McMaster, R. B. (eds.): *Scale and Geographic Inquiry. Nature, Society, and Method*, Oxford: Wiley, pp. 129–153.
- Szasz, A. and Meuser, M. (1997): "Environmental inequalities: literature review and proposals for new directions in research and theory," *Current Sociology* 45 (3): 99–120.
- Therborn, G. (2011): *Inequalities and Latin America. From the Enlightenment to the 21st Century*, Berlin: desiguALdades.net, Working Paper 1.
- Ulloa, A. (2010): *The Ecological Native: Indigenous Movements and Eco-governmentality in Colombia*, London: Routledge.
- Ulloa, A. (2012): *Producción de conocimientos en torno al clima. Procesos históricos de exclusión/ apropiación de saberes y territorios de mujeres y pueblos indígenas*, Berlin: desiguALdades.net, Working Paper 21.
- Vandergeest, P. and Peluso, N. L. (1995): "Territorialization and state power in Thailand," *Theory and Society* 24: 385–426.
- Watts, M. (2000): "Political ecology," in: Sheppard, E. and Barnes, T.J. (ed.): *A Companion to Economic Geography*, Malden, MA: Blackwell Publishers: pp. 257–274.
- Watts, M. and Peet, R. (2004): "Liberating political ecology," In: Peet, R. and Watts, M. (eds.): *Liberation Ecologies, Second Edition. Environment, Development, Social Movements*. London: Routledge: pp. 3–47.
- Wissen, M. (2015): "The political ecology of agrofuels: conceptual remarks," in: Dietz, K. et al. (eds.): *The Political Ecology of Agrofuels*, London: Routledge: pp. 16–33.