Knowing Soils: An Anthropology of Agricultural Knowledge

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On 27 and 28 January 2017, the Collaborative Research Center (CRC) 923 „Threatened Order – Societies under Stress“ at the University of Tübingen hosted an international workshop on „Knowing Soils: An Anthropology of Agricultural Knowledge“. Organized by the research group „Salinization and soil degradation as threats to the agrarian orders in Russia, Kazakhstan/ Tajikistan and Australia since 1945,“ the workshop offered an interdisciplinary platform where historians, political scientists, geographers and anthropologists working across the world discussed how different kinds of groups such as soil scientists and farmers know 'soil'. How do the assumptions about what soil 'is' (a notoriously slippery and heterogeneous category) and how it works, affect soil management? What factors and histories shape these diagnoses, which to date have failed to prevent soil degradation on a mass scale? The case studies, which paid attention to the relationship between local, national and global actors in responding to threats to agrarian orders, came from the UK, Germany, China, India, Russia, Central Asia and Australia.

ANNA KRZYWOSZYNSKA's (University of Sheffield) paper 'Choreographing cares, performing soil ontologies: the uneasy materiality of soil in English agriculture' discussed the potential of embedding care for soils in the changing agricultural soil management practices. Anna Krzywoszynska framed care both as 'an affective ethical state', and a praxis, a 'non-normative obligation', leading farmers from careful observations and expert opinions to new attempts at living with living soils (that don't always behave as predicted). Drawing on her fieldwork in England, Anna Krzywoszynska noted that farmers became involved in soil conservation practices to become 'better farmers', by experimenting with minimum tilling, creating a good seedbed and cultivating less, paying attention to soil structure and drainage systems. Her interviews suggested that these measures of soil care were inevitably linked to crop care and better yields, rather than 'intentional' care for the sake of soil health. However, the practice of attending to soils in a new way created overspill effects which had the potential to reconfigure 'good farming' as more soil-care centered, and less productivist. Anna Krzywoszynska ended her talk by calling attention to the need for a 'political soil science,' one that does not only attend to soils, but also to the relational network that makes space for, or sidelines, particular soil care practices: for example, the ownership of land or the timeframe in which profits have to be drawn from soils.

In her talk on 'Dirty (Agri)Business: On the contested politics of making soil in contemporary China,' MINDI SCHNEIDER (International Institute of Social Studies (ISS) of Erasmus University Rotterdam) gave a presentation on the transformation of China's agricultural scene since the 1980's economic liberalization policies. These rapid reforms have resulted in up to 40 per cent of agricultural soils counting as degraded, a scale familiar from the American mid-West. Her focus on pigs and pork related to her argument on what she coined China's 'industrial meat regime,' which results from the party-state led pork production and consumption boom in the late 1970s. The shift in state-led agricultural practices and ensuing industrial meat regime operates through state supported commercial firms called 'dragon head enterprises' which spearhead the domestic agribusiness sector and rural development projects. Building on Marx's concept of 'metabolic rift,' Mindi Schneider argued that while formerly pigs and manure had been highly valued as an important agricultural resource and pig farming was a small-scale, household activity in rural China, capitalist agribusiness and industrial livestock farming replaced these practices, shifting the values of pigs, pork and manure. She highlighted that China's industrial meat regime disembeds food production from ecosystem and social relations, resulting

not only in environmental degradation as manure from pigs (now superfluous 'waste') contaminates waterways rather than serving as a soil nutrient. Equally importantly, it also leads to the erosion of traditional environmental and agricultural knowledge and practices, as small-scale pig production loses out to large-scale contract farming schemes and peasant farmers move to cities for waged employment.

In his presentation titled 'Living and dying soils: Natural farming and the ontological politics of soil care in South India', DANIEL MÜNSTER (University of Heidelberg) presented a multispecies paper on politics of soil care with a case study on natural farmers following a movement championing nativist biopolitics in the South Indian state of Kerala. Alternatively called 'Zero Budget Natural Farming' or 'Spiritual Farming,' the movement, led by its charismatic leader Subhash Palekar, is an example of natural farming agronomies emerging in India that is skeptical about the destructive boom and bust of much agricultural development, technoscientific practices and definitions, and has established itself within the agronomical pluralism, besides conventional chemical farming and organic farming. Palekar converts many of the participants of his movement to a philosophy of farming with 'naturalness' as its core, i.e. abandoning the use of synthetic fertilizers and pesticides, cultivation of cash crops and hybrid animal husbandry. No longer subject to the growing costs of soil deterioration and perils of chemicals, many in this movement also abandon production and consumption of milk products, become vegan and embrace a non-exploitative agriculture that is radically ecological. Daniel Münster argued that this movement is in part a reaction to the state of Kerala's aggressive politics of milk production and animal husbandry introduced in the 1960s (the so-called White Revolution). While most native cattle breeds were then classified as 'unproductive', defective and inferior by the state's agricultural development program, a campaign for crossbreeding exotic cattle gained momentum, which led to a ban of reproducing native breeds and a significant shift in Kerala's cattle demography towards hybrids. This dualist taxonomy was adapted in completely reversed form by Palekar's movement, where exotic breeds and hybrids are not considered 'real' cows but a dangerous species, and part of an international conspiracy to destroy Indian agriculture. On the other hand, native breeds are venerated greatly and their excrement, dung and urine are made into the most essential bases for Zero Budget Natural Farming which conceptualizes soils as multispecies living entities. As natural fertilizers rich with beneficial microbes and substances that attract and feed microorganisms, earthworms and bacteria, excrements of native breeds, unlike those of exotic breeds and hybrids, are praised for their microbial abundance, which is considered vital for the health and fertility of naturally farmed soils, laying the foundation for India's ecological and cultural self-sufficiency. Daniel Münster raised the troubling proximity of these pioneering 'bionativist' ideas to Hindu Chauvinist discourses that often result in violent politics of discrimination.

As the last presenter on the first day of the workshop, SANDRA TEUBER (University of Tübingen) based her talk 'Gardens, soils and science' on her current PhD project on small garden associations in southwestern Germany. She offered a detailed analysis of her interviews with small garden holders in rural and urban areas and documented who these gardeners are, why they chose to have their plots in the first place, how they make use of their gardens, what they know about soils and how they apply their knowledge of soil in practice. Most small garden holders practice gardening as a hobby, often following a family tradition. The gardeners shared some knowledge with soil scientists, but their assessment of what a 'good' soil was and how to treat it differed largely from pedologist approaches. She documented a range of practices, from the widespread use of compost and manure, to gardening by the moon or using chemical fertilizers. A soil scientist herself, Sandra Teuber offered a balanced picture of differing approaches to soil and knowledge about it, particularly those of soil science experts and gardening practitioners. The discussion raised the question in what sense soils are renewable or non-renewable resources. From a soil science perspective, the

answer is that the current rates of soil erosion and degradation exceed the rates of soil formation. On a global scale, soil is thus a threatened resource.

While papers by invited speakers on the first day focused on the 'matter' of soil, the presentations by the members of the Tübingen soil salinization project on the second day of the workshop concentrated more on the intersection of environment and agriculture. DANIEL ROTHENBURG's paper 'Salt? What salt? Manufacturing ecological consciousness in rural communities of Victoria, Australia' presented a central aspect of his current PhD project on Australian environmental history from the late 1960s onwards. Daniel Rothenburg discussed strategies in manufacturing 'ecological consciousness' in the 1970s and 1980s among local populations in the Victorian part of the Murray-Darling Basin, paying particular attention to the groups and actors who organized and mobilized for environmental campaigns. As the region became the heartland of Australia's agriculture, the construction of a large-scale irrigation infrastructure and the settlement of new communities relying heavily on irrigation agriculture caused a variety of irrigation-based environmental problems related to soil and water salinity. As a culmination of efforts of various community groups to deal with the salinity problem in the late 1960s and 1970s, the 'Salt Action – Joint Action' strategy was launched in 1988. Community groups and state institutions joined forces to combat salinity through a variety of programs later subsumed into a broader struggle against a variety of environmental degradation issues. These programs focused on the problem of 'ignorance' about salinization, and saw 'awareness raising' and self-help as the main course of action, rather than e.g. large-scale recalibration of agricultural and economic priorities. Despite Australian policies enjoying a pioneering reputation, in fact they have not halted the spread of salinization.

In his paper 'Reinventing the wheel? Early and late Soviet struggle against soil salinization in a model cotton farm in Central Asia,' TOMMASO TREVISANI (University of Naples) contextualized present land degradation in the long-term history of land reclamation, irrigation and environmental degradation in the Kazakhstani part of the Hungry Steppe. He argued that the efforts to turn the arid Hungry Steppe into a cotton growing oasis as early as during the1860s demanded the construction of large-scale irrigation schemes in the region where irrigated lands began to salinize rapidly due to lack of drainage systems. Even though an irrigation induced soil salinization problem was diagnosed in the late Tsarist era and measures to cope with the problem were already underway, this initial set of valuable environmental knowledge went unrecognized by the Soviet scholars due to the shift in the political economy, ideological bias and institutional discontinuities, allowing the problem of soil salinization to persist and expand well into the Soviet era. In Maktaral district, where Tommaso Trevisani conducted his ethnographic data collection, the installation of large-scale drainage systems was completed in 1970s. However, due to costly maintenance and territorial-administrative issues they began to deteriorate already before the dissolution of the Soviet Union. The gradual dismantling of collective enterprises that oversaw drainage schemes and the fragmentation of farm lands led to a total negligence of drainage infrastructure and the freefall of cotton production, scarcity of jobs and weakening of local livelihoods in the early years of independence. Despite the long-term history of soil salinization in the region, measures to cope with it have been fragmented and environmental knowledge has not been systematically put into practice until after the fact, a process Tommaso Trevisani called 'environmental amnesia', as longstanding environmental lessons had to be relearnt. Our discussion queried where and how exactly 'environmental amnesia' had happened and what kind of 'knowledge infrastructures' and events would precipitate such a situation.

In his talk titled 'Livelihoods between ruination and development: Political economy of soil degradation in Central Asia,' MUSTAFA COŞKUN (University of Tübingen) introduced his new project on the study of parallel processes of ruination of agricultural infrastructure installed in the Soviet era and post-Soviet era national and interna-

tional efforts to rehabilitate and replace them in southern Kyrgyzstan. The project will explore how these simultaneous processes, which are both the cause and repercussions of soil degradation, frames the context of agrarian transition in the region. The areas of inquiry of Mustafa Coşkun 's project comprises of (1) the intersection of different types of knowledge about soil and its degradation, forms of knowledge that are embedded in local experience and practice vs. scientific, abstract knowledge; (2) the interplay between soil degradation and cultural and material coping strategies; (3) the role relationships of patronage and clientelism and kinship networks play in securing access to newly available resources.

As the final presenter of the workshop, TIMM SCHÖNFELDER (University of Tübingen) gave a presentation titled 'Thinking soils, Soviet science and the threat of salinization' in which he discussed the evolution of irrigation and human-induced soil degradation in the Kuban River region in the North Caucasus, an agriculturally prominent region of Russia. Construction of massive hydrological infrastructure that began in the region in 1950s did not meet the expected increase in the crop production, as faulty irrigation methods led to high levels of soil salinization which could not be prevented by ill-designed drainage systems. Due to a constellation of political and practical reasons, the state departments and politicians disregarded the opinions of pedologists and other scientists on the proper installation of drainage systems, efficient irrigation methods and their warnings on environmental consequences. Timm Schönfelder argued that soil salinization as an ecological threat could not be efficiently countered due to the heavily centralized management of Soviet agriculture and its arduous decision-making procedures, local elite's lack of cooperation with state departments and farmers' lack of knowledge about the threat of salinization and a general tendency to forsake scientific findings for fulfillment of ambitious production plans. Our discussion aired the role of different sciences and their prestige, contrasting the seemingly 'humble' science of pedology and its warnings, with the grandly visible products of water infrastructure engineers.

In sum, as large-scale soil degradation has been widespread in the 20th century, regardless of Cold War divisions into a 'capitalist' Australia or 'socialist' China and USSR, this workshop highlighted the necessity for new frames of analysis, based on the differentiated and fine-grained case studies presented. The challenge is how to understand, diagnose and hopefully improve the highways and backwaters of 'knowing soils' – be they at the forefront of Keralan farmer movements, or at an FAO congress – and their consequences in soil degradation. This at a time when such subtle catastrophes are easily side-lined by more 'rock star' environmental disasters, and when many social scientists and historians still have a hard time taking 'soil' seriously, or even allowing soil a center stage role.

Conference Overview:

Jeanne Féaux de la Croix, Tommaso Trevisani
Introduction

Anna Krzywoszynska, Sheffield
Knowing What? Knowing How? Knowledge and the Care for Soils.

Mindi Schneider, Amsterdam
Dirty (Agri) Business: On the Contested Politics of Making Soil in Contemporary China

Daniel Münster, Heidelberg
Living and Dying Soils: Natural Farming and the Ontological Politics of Soil Care in South India

Sandra Teuber, Tübingen
Gardens, Soils and Science

Daniel Rothenburg, Tübingen
„Salt? What salt?" Manufacturing ecological consciousness in rural communities of Victoria, Australia

Tommaso Trevisani, Naples
Reinventing the Wheel? Early and late Soviet struggle against soil salinization in a model cotton farm in Central Asia

Mustafa Coşkun, Tübingen
Livelihoods between Ruination and Development: Political Economy of Soil Degradation in Central Asia

Timm Schönfelder, Tübingen
Thinking soils, Soviet science and the threat of

salinization

Final Discussion

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