



The “sowing of concrete”: Peri-urban smallholder perceptions of rural–urban land change in the Central Peruvian Andes[☆]



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ABSTRACT

Policy makers concerned with the peri-urban interface find their greatest challenges in the rapid urban growth of developing mountain regions, since limitations caused by relief and altitude often lead to an increased competition between rural and urban land use at the valley floors. In this context, little attention has been paid to the affected agriculturalists' perceptions of peri-urban growth—important information required for the realization of sustainable land use planning. How is the process of rural–urban land change perceived and assessed by peri-urban smallholder communities? Which are the major difficulties to be overcome? By what means are the affected people reacting and how are these adaptation strategies linked with the ongoing landscape transformations of the hinterland?

By using the example of Huancayo Metropolitano, an emerging Peruvian mountain city, it is shown that rural–urban land change is intensively discussed within peri-urban smallholder groups. Although urbanization also leads to infrastructure investments by public institutions—an advantage perceived throughout the study area—the negative impacts of rural–urban land use change prevail. The perceptions' analysis reveals that the decrease of fertile and irrigated agricultural land at the quechua valley floor is especially considered to threaten subsistence, food and income security. In order to compensate the loss of production capacities, many smallholders try to expand or intensify their land use at the suni altitudinal belt: an agro-ecological zone characterized by steep and nonirrigated slopes that can actually not be used for the year-round production of crops previously cultivated at the quechua zone.

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Introduction

Background and aims

Due to the socio-economic and biophysical diversity of hybrid rural–urban areas, the highly dynamic land use patchwork at the peri-urban¹ interface (Allen, 2003; Brinkley, 2012; Qviström and Cadieux, 2012; Simon, 2008) has received increasing attention by applied research, land use planning and policy making—especially over the last decade. To a certain degree, this tendency also applies

to studies on the perception of land use change. Gilg (2009) concludes that urban areas are often grossly overestimated by farmers and that the “rural idyll” remains a persistent myth within urban populations; recent studies (Ives and Kendal, 2013; Slempt et al., 2012; Soini et al., 2012; Swanwick, 2009) moreover show how changing peri-urban landscapes are perceived by different stakeholders. Research in this area, however, has predominantly been carried out in more developed countries and has hardly considered regional geographic specificities.

Mountain valleys, for instance, represent a peculiar type of space that is particularly vulnerable to urban sprawl and rural–urban land use change, as the construction of roads and thus settlement expansion occurs mainly on the arable land of the valley floors and adjoining lower slopes. Consequently, rapid urbanization—especially if of low density—causes both changes in the use of environmental resources (such as land for food production) and social transformations within the hinterland's rural communities. MacDonald and Rudel (2005) have underlined the peculiar patterns of residential and forest land use in New Jersey's exurban Appalachian valleys and, in this context, Rudel et al. (2011) have pointed out that the impacts of the recently emerging, more exclusive forms of land use on society and environment remain poorly understood. Also with respect to the European

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¹ In the present study, the term “peri-urban” is used in a double sense (thus meaning “the marginally urban at the urban margin”). I refer to those parts of the formerly exclusively rural hinterland that are now characterized by mixed rural and urban land use and land cover structures. Peri-urbanization (Zasada et al., 2011, p. 63) is thus that part of “rural–urban land change” (interchangeably used with “urbanization”) that temporarily or permanently leads to peri-urban landscape structures.

Alps, several studies on urbanization and the land use developments mentioned have already been carried out (Bertrand and Vanpeene-Bruhier, 2007; Hersperger and Bürgi, 2009; Perlik et al., 2001; Peyrache-Gadeau and Fleury, 2005). Regarding the Central Andes, by contrast, in recent years less attention has been paid to the rural–urban restructuring and its perception by local people—especially in the hinterland of intermediate mountain cities. Yet, this is eminently necessary, as many medium-sized Latin American cities (Bolay and Rabinovich, 2004; Goluchowska, 2002; Klaufus, 2012; Stadel, 2001; Steel, 2013) are following the metropolises' development of major, globalization-driven urban restructuring (Borsdorf and Hidalgo, 2008, 2013; Portes and Roberts, 2005; Roberts, 2005); different sociocultural attitudes (Knapp, 2010), mainly neoliberal versus indigenous *Weltanschauungen*, lead to varying understandings of how land use should be steered by planners and policy makers (Othengrafen and Reimer, 2013). Moreover, rising socio-ecological inequalities within the rural–urban mountain landscape—a tendency partially boosted by poverty-driven rural–urban migration and lifestyle-oriented urban–rural movements—conspicuously entail potential for land use conflicts between the stakeholders. Among the respective groups of interest, the inhabitants of peri-urban agrarian settlements are often not taken into account in urban planning, probably because the rural vernacular is not considered part of the modern city. However, these people represent a group directly affected by urban sprawl; albeit not always detrimentally (Robinson, 2008, p. 25; Satterthwaite et al., 2010).

Given the UN-HABITAT program's objectives of participatory problem solving and propoor governance, the present case study generally aimed at investigating the locals' perceptions of ongoing rural–urban land changes, and thus supporting decision making for sustainable development and management in the hinterlands (Raymond et al., 2010) of Andean mountain cities. Using the example of Huancayo Metropolitano, a Peruvian mountain city of currently 420,000 inhabitants distributed over seven districts (Haller and Borsdorf, 2013), the study's specific aims were as follows: (1) to determine the smallholders' attitudes toward the urban sprawl of Huancayo Metropolitano; (2) to understand the consequences of urbanization for their land use; (3) to interpret these assessments against Haller's (2012) quantitative results of Huancayo's rural–urban land change. What are the impacts of urbanization on the smallholder livelihoods perceived by the affected communities themselves? Are they profiting from this residential development by selling lots to the new peri-urban dwellers? What further consequences does it have for the agricultural land use and how may these changes be linked to the Andean landscape transformation?

Temporally, the focus was laid on the last 15 years (1998–2013), for the *Zeitgeist* of neoliberal policies in Peru arose with ex-president Alberto Fujimori during the 1990s. Epistemologically, the present research was mainly positioned between empiricism and humanistic perspectives, and included a historicist vision (Gade, 2011; Rudel, 2009); by applying the inductive method, observation generally allowed a step-by-step approximation from individual cases to a characteristic type of perception, while hermeneutic interpretation additionally led to a better understanding of these attitudes' impact on the cultural landscape's genesis.

Study area

The Central Peruvian agglomeration of Huancayo Metropolitano (3260 m asl), situated at approximately 12°4'S and 75°12'W between the Western and Eastern Cordillera in the Mantaro Valley, has changed from a rural town of around 6000 people (at the end of the 19th century) to an emerging commercial agglomeration

that is now undergoing major socio-economic changes (Haller and Borsdorf, 2013; Roberts, 1995). Its urban center is located on the alluvial fan of the Shullcas River, a tributary of the Mantaro River that issues near the Chuspicocha (from Quechua *ch'uspi* for “fly” and *qocha* for “lake”) and Lasuntay—from Quechua *qasa* for “frost” and *quntay* for “smoke” (Cerrón-Palomino, 1989)—glacial lakes at 4600 m asl. For the purposes of the present qualitative research, the orographic left side of the lower Shullcas Valley (Fig. 1), which is entirely situated within the district of Huancayo, has been considered eminently suitable: (1) it represents a zone of major peri-urban development in Huancayo Metropolitano (Haller and Borsdorf, 2013) and is locally known as one of the city's best residential areas; (2) it is mainly situated below 3500 m asl within the *quechua* altitudinal belt (Pulgar Vidal, 1946; Zimmerer and Bell, 2013)—the zone where almost all urbanization processes occur (Haller, 2012).

Direct field observations have identified Palián to be the most peripheral of the fully urbanized settlements in the Shullcas Valley. This limit coincides with the end of the “zone for district commerce” (*zona de comercio distrital*) and the beginning of the “low density residential zone” (*zona residencial de densidad baja*), as defined by the municipality's urban land use zonation 1996–2005 (Municipalidad Provincial de Huancayo, 1996). Consequently—using the 1993 statistics of hamlets and villages (Instituto Nacional de Estadística e Informática, 1993) as well as a topographic map (scale 1:100,000) of the National Geographic Institute (Instituto Geográfico Nacional, 1999)—all the district's statistically defined agrarian settlements or *unidades agropecuarias* located beyond Palián and within the *quechua* altitudinal zone have been taken into account: Uñas, Vilcacoto and Chamisería; while the first one lies within the “low density residential zone”, the latter are already part of the “inviolable agricultural zone” (*zona agrícola intangible*). The individuals belonging to the agrarian villages' families have then been considered smallholders, even though not all family members are working in the primary sector. Following (Figuroa, 1984, pp. 13–14), these mostly nuclear families are defined as consisting of those persons who are living in the same house.

Materials and methods

Sampling design

Given the study's research design (audio-recorded, structured interviews exclusively carried out by the author), the desired sample size of 75 persons, the study area's spatial extent (approximately 4000 m × 500 m) and the time exclusively available for interviews (one month), nonprobability quota sampling appeared best suitable for the planned qualitative research process.

This method aims at achieving a sample structure similar to that of the total population (often known through census data; Table 1)—for example regarding the relative distribution by gender within a certain area—in order to allow a certain degree of generalization (Daniel, 2012, pp. 105–107) and is mostly applied if no list of the statistical population's elements exists. On the one hand, for the interviewees are not randomly selected, the sampling error cannot be estimated and the selection bias is not minimized. On the other hand, however, the consideration of the variables of interest (place of residence, gender, age) within a proportional quota sampling plan increases the probability to include even elements of small groups and enabled a more detailed identification of perceptions within the sample.

Since the statistical information shown in Table 1 only offered separate data (gender, age) about the respective settlements' population—without giving details on gender ratios per age

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