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# Heterogeneity reconsidered

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Farming styles are distinctive patterns through which agricultural production is organized and developed. Different styles result in different levels of intensity and sustainability. This means that encouraging and stimulating specific farming styles might result in considerable agricultural development and growth of total food production. Currently, peasant-like styles of farming offer a great deal of promise for feeding the world in a sustainable way.

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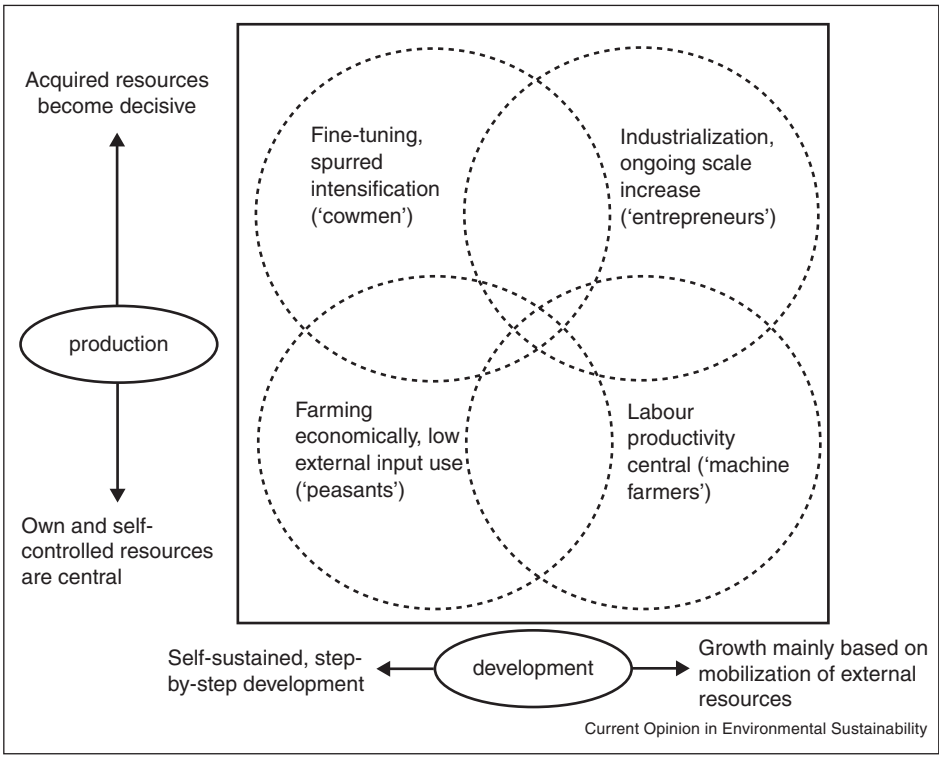
Growth and development can occur through both exogenous and endogenous processes. This applies to agricultural development generally, and more specifically to agricultural growth, that is, the increase of the totally produced amount of agricultural products and food. Exogenous processes essentially depend on the introduction of new techno-institutional models into the agricultural sector and a subsequent re-structuring of resource-use patterns and politico-economic relations ([1,2•]; for a critical view [3]). Building on the classical work of Schultz, proponents of the exogenous model have often claimed that existing socio-material constellations are incapable of generating the required growth [4]. This has led them to claim that external interventions, such as new technologies, new organizational models and more capital are critically needed. As a consequence, development inevitably represents a rupture between the past and present. The future is conceived as a *newly* ordered constellation centred around *newly developed* technological and institutional elements. The current discourse, based on the premises that world food production needs to be doubled (to feed a growing population, demanding a more animal protein rich diet) while the areas needed for agriculture should be reduced, assumes the need for an exogenous approach. Such approaches are promoted by CGIAR, FAO, Monsanto, Nestlé, DuPont, etc. and sometimes also by academic institutions. The introduction of GMOs (and the associated 'package'), an overall deregulation of agricultural markets (in order to increase the inflow of capital) and the adoption of the 'Dutch model' of a highly intensified and specialised agricultural sector are the main pillars of this approach.

In contrast to this, agricultural development and growth might also be conceptualized and consequently structured, as endogenous processes [5–9]. In such a schema development is not a departure from, but instead, a further *unfolding* of existing agrarian realities. In this respect, heterogeneity, which can be understood as the outcome of often highly contrasting underlying patterns, is a key-word. These patterns operate as modes of ordering: they shape different realities and different development trajectories. In agrarian sciences these underlying patterns are identified as *styles of farming*. It has been proven that *specific* farming styles often contain the solution for more general problems.

## Farming styles

A farming style is a distinctive way of ordering the many socio-material interrelations involved in farming. Each style can be seen as a distinctive way of equilibrating the many balances that link farming, the farming family and the outside world [10]. Almost everywhere in the world one can find different, co-existing, farming styles. This reflects the fact that farming can be ordered (and can be organized and developed) in different and often highly contrasting ways (see for example [11–14]). Temporally, farming styles provide a degree of continuity [15••,16]. They are the outcome of the goal-oriented, knowledgeable and strategic behaviour of actors, with the different strategies reflecting the conditions under which they operate, their prospects and plans for the future [17]. Farming styles are solidly rooted in cultural repertoires [18] and mould the processes of production and development in different, often contrasting, ways (see Figure 1). Thus they contribute to the overall heterogeneity of agriculture.

**Figure 1**




The socio-economic landscape as shaped through different farming styles (derived from [68], p. 137).

Styles of farming have been the object of considerable debate [19–21]. This debate has partly centred on the question of why farming styles differ so much between, say, France, South Africa and Australia [22–24]. It is now generally accepted that such differences reflect not only the research objectives [21] but also the specificities of time and place (which might reside in for example eco-systems, governance schemes, town-countryside relations or newly developed farmers' responses to crisis situations). Recently Fairweather and Klonsky [25] have suggested that Q-methodology is the best possible way to deal with such complexities.

## Differential impact

Because farming styles imply a distinctive ordering of the agricultural process of production, different styles can have a remarkably different impact on a range of key issues, such as productivity, resource-use efficiency, sustainability, animal welfare, biodiversity and the landscape. The last three dimensions have received a considerable attention over recent years. de Rooij *et al.* [26] link the social definition of animal welfare and associated practices to style differences — both old and new. [27–29,30•] show how different farming styles have shaped landscapes in Denmark, France, Mexico and Austria. [31–33] focus on birds and wildlife, whilst [34] centre on plant species richness in meadows. These later studies clearly demonstrate that farming cannot be thought as only exerting one undifferentiated (and negative) effect on biodiversity. While some styles certainly do exert disruptive effects, other styles of farming (operating under the same conditions and within the same region) considerably strengthen and enrich biodiversity. [35,36–37] discuss how such positive effects can be generalized and further strengthened, whilst [38] relate this to the economics of the farm.

Resource-use efficiency also varies greatly between different styles. Differences in application levels and input–output relations of nutrients (notably N) have received a lot of scholarly attention [39]. Currently, pesticide-use is receiving similar attention [40]. Sustainability as a concept that synthesizes a wide array of social and environmental criteria has also been linked to farming styles [16,41,42]. These studies show that there are substantial and significant differences between styles. Style dependent variation has also been documented for other resources. In the Tras-os-Montes region in the North of Portugal, van den Dries [43] convincingly showed that locally rooted styles of breeding were able to produce a gross income of 660 Escudos per cubic metre of scarce summer water, whilst newly introduced exogenous styles only realized 210 Escudos per cubic metre (Table 5.2). Equally there are clear and systematic differences in