

Chapter 15

A Human Ecological Approach to Ester Boserup: Steps Towards Engendering Agriculture and Rural Development

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15.1 Making Women Visible

With her pioneering comparative studies in Asia, Africa, and Latin America, which were published as *Woman's Role in Economic Development* (1970), Boserup provided empirical evidence of the importance of women in agricultural activities and rural development.¹

When analysing the gender arrangement, particularly in rural areas, we should consider the following issues defined by Boserup:

1. Access to productive resources: land, water, and other environmental resources and assets (Boserup 1970)
2. Technological development (Boserup 1981)
3. Population growth (Boserup 1965)
4. Division of labour and the productivity gap (Boserup 1970, 1989)
5. Effects on changes in women's status in society and on their social spaces (Boserup 1970)

Despite the changes that have occurred during the last decades, the issues listed above are still key aspects for analysing gender relations and women's contributions to rural livelihood and development. These aspects are all crucial to understanding women's social status and their spaces within communities and societies.

¹ During the Ester Boserup conference in Vienna in November 2010 ("A Centennial Tribute—Long-Term Trajectories in Population, Gender Relations, Land Use, and the Environment"), we started a discussion at the working group on Gender and Globalisation. This discussion focused on some of Boserup's theories about changes during recent decades and the lasting relevance of Boserup's work at the beginning of the twenty-first century.

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Ester Boserup conceptualized a more holistic approach to understand the complex processes of development. Her concept of the division of labour and female and male types of farming as well as her classification of food crops and cash crops from a gender perspective are still relevant today, although tremendous changes are underway (Zdunnek and Ay 1999 and some chapters in this publication). Boserup started her research as an agricultural scientist. She did not argue from a feminist perspective at first, but by analysing processes of colonial rule and modernisation, including the implementation of innovations in the field of land use policy, she discovered how those processes had affected women and men differently:

European settlers, colonial administrators and technical advisers are largely responsible for the deterioration in the status of women in the agricultural sectors of developing countries. It was them who neglected the female agricultural labor force when they helped to introduce modern commercial agriculture to the overseas world and promoted the productivity of male labor. (Boserup 1970, p. 53 f.)

In her comparative studies in Asia, Africa, and Latin America, Boserup demonstrated that the productivity gap between women and men increased during the modernisation process. One important issue is the implementation of new agricultural technologies since colonial times:

With the introduction of improved agricultural equipment, there is less need for male muscular strength; nevertheless, the productivity gap tends to widen because men monopolize the use of the new equipment and the modern agricultural methods. (Boserup 1970, p. 53)

Boserup explained differences in the status of women as a matter of social structure rather than individual destiny. Most importantly, she was one of the first scholars to address the “invisibility of women” in the field of human livelihoods. Boserup made women visible within scientific discourses. She argued that processes of agricultural development and modernisation, such as capital-intensive innovations including the introduction of tractors and other machinery that were monopolised by men, weakened women’s position and partly marginalised them economically and socially. The gender gap that Boserup discovered long ago was recently addressed by the Food and Agriculture Organisation (FAO 2011a, b). I will discuss the FAO actions below.

Boserup was critical of the misguided developments resulting from the failure to perceive the basic contributions women made to rural life. She clearly believed that these processes of change were not beneficial to the social status of women because they threaten the improvement of their living conditions. The invisibility of female activities became and remains an important issue that has inspired subsequent debates on Women and Gender in Development.

15.2 The International Recognition of Women and Gender in Development

Boserup (1970) provided an important scientific basis for the discussion of Women in Development (WID) and Gender and Development (GAD) (also see Moser 1989). Her concept of the gendered division of labour—although she did not use the term

“gender”—provided an accurate explanation of issues that became more prominent in the development debate of the late 1980s and early 1990s, when differences between sex and gender as well as WID were transformed into GAD. At that point, development approaches and projects began to notice the discourse about the social and cultural construction of gender (Braig 2001).

In fact, Boserup’s publication of 1970 influenced the first UN women’s conference in Mexico in 1975. Two other women’s conferences were subsequently organised, one in Nairobi in 1985 and the other in Beijing in 1995. The Nairobi conference was important for giving women in the Global South a voice. One of their organisations, Development Alternatives with Women for a New Era (DAWN)², has developed an independent position on gender and sustainable development from a Global South perspective (Braidotti et al. 1994). In conjunction with the discussion on environmental issues, concepts of Women, the Environment and Sustainable Development (WED) were established to seek sound social and environmental development (ibid.). The purpose remains to create alternatives that go beyond the mainstream modernisation processes of change and protect human livelihoods. DAWN seeks development concepts that avoid environmental degradation and the loss of biological diversity, similar to the organisation “Diverse Women for Diversity”³ (Shiva 1989, 2007). These organisations support women’s empowerment and human rights because they pursue economic and gender justice on a national and global level (DAWN 2012).

The 1995 Platform of Action resulting from the UN women’s conference in Beijing put gender mainstreaming discussion on the political agenda of national and international organisations. It still is an important document for gender justice and gendering policy arenas.

However, despite the many publications about and the considerable “lip service” paid to the importance of women’s essential contribution to development, the de facto changes have been modest (the “World Bank Report 2012” has been criticised by Razavi 2011⁴ and by Behrman et al. in Chap. 12 of this publication).

Despite the many international activities and UN organisations engaged in gender mainstreaming and promotion of WED and GAD, the paradigm shift has not reached the mainstream research agenda and project activities. The international organisations, including the FAO, all have wonderfully designed websites, handbooks, training manuals, and packages with tool kits on women’s and gender issues in agriculture and forestry (Augustin 1995; FAO 1995, 2004; GTZ 1998; Kerstan 1995), but real policymaking must still be gendered on both the national and global level. Rural gender issues require special emphasis if problems of hunger and sustainable rural development are to be solved.

² “DAWN is a network of feminist scholars, researchers and activists from the economic South working for economic and gender justice and sustainable and democratic development.” (<http://www.dawnnet.org/about.php?page=us>, retrieved February 24, 2012).

³ Their focus is on bio *biodiversity*, *food* and *water*. This organisation called “Navdanya” seeks to strengthen women’s grassroots movements and try to provide women with a common international platform (<http://www.navdanya.org/diverse-women-for-diversity>, retrieved September 9, 2012).

⁴ The report was already published in 2011 and is subject to comments and criticism.

15.3 Rural Gender and Women's Studies

Numerous studies have been conducted about women and gender in rural development in the countries of the Global South. Rita Schäfer (2000/2012) provides a comprehensive bibliography in which she lists 1,300 articles, each with a short summary, for Africa alone. International organisations, particularly several UN institutions, have promoted research and publications dealing with WID and GAD. The Rome-based FAO offers a broad range of research and information on rural development, agriculture, horticulture, forestry, and fishery on the national and international level. This UN organisation has promoted the importance of women in agriculture through high-quality papers and videos. Examples include the latest research findings published in “Gender in Agriculture. Closing the Gap for Development” (FAO 2011a, b) in addition to an appealing but ambivalent video clip which underlines women's participation in the modernisation process of agricultural development. For example, the FAO notes that by giving women access to resources such as land, technology, and seeds, they will be able to produce 20–30 % higher yields.⁵

However, this FAO approach does not express any criticism of the modernisation process of agricultural development from the perspective of either sustainability or livelihood, focusing instead only on quantity and increasing women's yields. Agarwal mentions some research, particularly in African countries, demonstrating that women can be as productive as men: “A few studies show that if women had access to the same inputs and extension services they would have higher outputs than male farmers.” (Agarwal 2011, p. 14)

However, one must take into account that even if they produce the same agricultural output as their male counterparts, female farmers might still be much more “productive” than men because they are responsible for a whole range of household tasks and care economy activities in addition to agricultural and horticultural work. Including their domestic activities, which involve productive and social reproductive responsibilities as well as communal work (Beneria and Sen 1981; Elson 2002; Moser 1989), women's contribution and overall “yields” actually are not lower. If women become even more involved in agriculture, the question remains: Who will manage the many other responsibilities and tasks that they have had to shoulder so far?

Such matters have not yet been resolved. Thus, the question remains whether women should get a bigger share of the same poisoned cake—a question that was asked by members of DAWN. The idea is not simply to have women do what men have already been doing, but to consider new alternatives. The aim is gender justice and engendering agricultural development towards sustainable livelihoods and food sovereignty (Jacobson 1992; Shiva 1989). Such aims cannot be reached merely by promoting greater participation by women, as the FAO's “Closing the Gap” idea

⁵ For example, see the interview with Terri Raney (2011), editor of “The State of Food and Agriculture”, and the film “Closing the Gap”. The aim is to give women a greater share of productive resources (FAO 2011a, b).

(FAO 2011b) suggests. We need another concept that considers the negative sides of agricultural development more seriously. On the one hand, environmental movements and feminist concepts are focusing on the sustainability of development, including ecological and social welfare components as well as long-term economic prosperity. On the other hand, feminist analysis is illuminating the unbalanced power relations on the local, regional, and global levels. Feminist analysts view gender justice and the right to food and clean water as necessary human rights. This approach will involve moving beyond the strategies that have proved to be unhelpful in overcoming hunger and food insecurity during recent decades. This outcome is a shame because sufficient food exists to nurture as many as 12 billion people globally (Ziegler 2010).⁶

Meanwhile, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD 2008) offers a different approach to rural development than the FAO approach (FAO 2011a, b). The IAASTD report (2008), which resulted from the collaboration between 2002 and 2008 of more than 400 experts from most countries around the globe, offers a rather critical view of the modernisation processes for agricultural development in recent decades. The report's main message is that "business as usual" is not an option if food security is to be achieved. One of its recommendations addresses women's participation in agriculture and food security. This message should be considered more seriously if the international community wants to eliminate hunger in the foreseeable future.

There is an urgent need for *priority setting in research* to ensure that women benefit from modern agricultural technologies (e.g., labor-saving technologies and reduced health risk techniques) rather than being overlooked in the implementation of technologies as has often occurred in the past [. . .]. For social and economic sustainability, it is important that technologies are appropriate to different resource levels, including those of women and do not encourage others to dispossess women of land or control their labor and income. Development of techniques that reduce work load and health risks, and meet the social and physical requirements of women can contribute to limiting the negative effects of the gender division of labor in many regions. Modern agricultural technology should not undermine women's autonomy and economic position. Targeted measures will be needed to ensure this does not happen. (IAASTD 2008, p. 79)

In addition, the Executive Summary of the IAASTD report articulates some necessary steps, including strengthening the capacity of public institutions and NGOs to improve women's knowledge and skills because women's involvement in farming and other activities has changed.

It also requires giving priority to women's access to education, information, science and technology, and extension services to enable improving women's access, ownership and control of economic and natural resources. To ensure such access, ownership and control legal measures, appropriate credit schemes, support for women's income generating activities and the reinforcement of women's organizations and networks are needed. (cited by GreenFacts 2008)

⁶ "In a world overflowing with riches, it is an outrageous scandal that more than 1 billion people suffer from hunger and malnutrition and that every year over 6 million children die of starvation and related causes. We must take urgent action now." (Jean Ziegler 2010 in: Right to Food).

Gender analysis will reveal the mostly unbalanced and unequal position that exists on the local, regional, and global levels. Henrietta Moore (1995) provided a more sensitive approach in her book, *A Passion for Difference*, which has inspired empirical field research in many countries, such as some in Latin America (Zuckerhut et al. 2003).

Analysis of the potentials and challenges is required on different levels to recognise and understand the scope of action available (Teherani-Krönner 1989, 2008b). It is not the gap approach, but rather a positive evaluation of local capacities that could lead to a more balanced structure in the future. Discovering such scope of actions is a prerequisite for improving the quality of life and livelihoods in rural and urban areas. Without it, neither food security nor rural development can be achieved. This is an important aspect of a sustainable development process that will enable the overlap of ecological, economic, and social welfare dimensions within a community. Hence, we must seek a relational gender approach (see Chap. 9 in this publication) rather than a dual construction.

15.4 Criticism of Boserup and Her Terminology

Although Boserup's work has been praised, some scientists have criticised her articles and rejected her theoretical approaches (Beneria and Sen 1981). She has even been condemned for using a terminology that belongs to the colonial era of Western domination (McCune 2006). I do think that from today's perspective, terms such as "underdeveloped countries", "primitive societies", and "primitive techniques", as used by Boserup, are controversial. They sound strange and outdated. They are no longer applicable because they belong to the periods of colonial history and Western hegemony. However, such ideas might still exist because even the use of "developing countries" instead of "underdeveloped countries" does not really change the concepts behind these terms.

During the 1970s and 1980s, in the time of the Cold War, the West and East were seen as the "First World" and "Second World", respectively, whereas non-industrialised countries were known as the "Third World".

Old labels such as "underdeveloped" and "primitive" must be avoided because of political correctness. Now we talk about the countries of the Global South and take a post-colonial approach, but I am not sure whether we have really overcome the attitudes that accompanied the former concepts.⁷

In the time when Boserup was actively involved in research while living in different parts of Asia and Africa during the 1950s and 1960s, the terminology was indeed different. To a certain extent, I agree with the criticism expressed by researchers

⁷ In his book on Orientalism, Edward Said (1981) brought to light the deeply rooted domination and superior attitude of European and Western cultures towards the Middle East, for example. Raewyn Connell (2007) discusses the ongoing hegemony in this work on southern theory, in which he provides numerous examples of patronisation of countries of the South and their knowledge systems.

such as Julie McCune (2006) who argue from a post-colonial perspective. McCune rejects Boserup's work partly because terms Boserup used are considered insulting today. However, if we read between the lines in Boserup's articles, we find that she was quite progressive and made advanced arguments on conceiving and theorising issues such as gender and globalisation in the field of agriculture, horticulture, and food security almost half a century ago (Braig 2001).

15.5 Gender Order Rather than Women's Role

Another point that I think should be revisited is found in the title of Boserup's pioneering work, *Woman's Role in Economic Development*. Still in line with her own explanations, we know that the different ways of dividing the workload are subject to change:

Despite the existence of stereotyped sex roles and the universality of women's concentration in domestic work, Boserup noted significant differences in women's work across countries and regions. She criticised the 'dubious generalisation' that attributes the provision of food to men in most communities; women too have been food providers in many areas of the world. (Beneria and Sen 1981, p. 280; Boserup 1970, p. 15)⁸

The idea of a women's role—as with role theory itself—is no longer generally accepted. “Role theory” and the women's role model might no longer be adequate. Therefore, the term “role” should be questioned. Considering the possibilities of moving towards more dynamic conceptualisations, we need to recognise women's agency and respect their bargaining power. Many WID studies assume that women are vulnerable. Such studies do not sufficiently value women's strength and power in managing the challenges of everyday life within the household and the community. To consider such relationships, we cannot use models and terms that are too static, which may obscure the gender arrangements embedded in the complex structures of personal, social, and cultural dynamics. This is important in the field of agricultural production as well as in the food security debate.

In general, strategies for attaining food security are still based upon an image of women that depicts them as vulnerable or deprived, and that wholly underestimates women's active share to food and household security. The visible and the invisible contribution of women have not yet been fully recognized and appreciated in the mainstream of food security debate—either in Iran or at the international level. (Teherani-Krönner 1999, p. 195)

The negotiation of gender and gender arrangements is changing. Indeed, it has always been negotiated and rearranged. This is one of the well-documented facts in the comparative studies by Gudrun Lachenmann and Petra Dannecker (Lachenmann and Dannecker 2008). Gender relations are not a matter of individual destiny but are embedded into the social power structure of a society that constitutes gender order (Bourdieu 2005; Connell 2007). This is why the socio-economic as well as the context are an important aspects of gender analysis.

⁸ See the citation in the next section on the term “natural”.

Women are not a homogeneous group. Boserup did not explore this particular issue in great detail (Beneria and Sen 1981). However, one can recognise the many different positions that exist in the gender order, not only between men and women. Differences among social groups, such as class hierarchies and ethnic discrimination, must also be taken into account. Social status by age, religion, and other group identities must be considered to understand the social structure and relationships within a community. These intersections and overlapping connections create the gender orders in both rural and urban livelihoods.

Instead of using the terms “women’s role” or “gender role”, which are assumed to be given and fixed, I recommend more dynamic descriptions. Using the term “gender arrangement” will facilitate a more flexible relationship that is open to negotiation. However, “gender arrangements” might be located on an individual level, where they may remain dependent on the bargaining potential and power of different actors. In contrast, the term “gender order” will include relations or arrangements within the hierarchical structures of the entire society with respect to the cultural setting. Thus, I would suggest investigating the “gender order” instead of discussing gender roles. We should focus on women’s and men’s contributions, shares or burdens in managing everyday life challenges. Broadening the scope of action and freedom of choice for women are important development aims. Gender justice remains a target because we face discrepancies and gender gaps that encompass the structural differences within and among the members of societies on a local and global level.

I think that we can still use more dynamic concepts of gender order in line with Boserup’s approach because in her own work she was critical of the use of the term “natural” and the way that the relationship between women and men was taken as given and fixed.

15.6 What is “Natural” About Nature?

It is worthwhile to think in depth about Boserup and her attitude towards “nature” and the “natural” division of labour. She presents a good example for her perceptive observations. The following quotation reveals an interesting differentiation in her understanding of “natural”:

Both in primitive and in more developed communities, the traditional division of labor within the farm family is usually considered ‘natural’ in the sense of being obviously and originally imposed by the sex difference itself. But while the members of any given community may think that their particular division of labor between the sexes is the ‘natural’ one, because it has undergone little or no change for generations, other communities may have completely different ways of dividing the burden of work among the sexes, and they too may find their ways just as ‘natural’. (Boserup 1970, p. 15)

The way that Boserup perceived the variations in the division of labour within different societies appears to perfectly define the differences between sex and gender. I find that her argumentation aligns with later discourses on sex and gender. In Anglo-Saxon terminology, sex refers to biological differences whereas gender is the social

and cultural construction of the gender order.⁹ In a way, this distinction was an integral part of Boserup's thinking when she discussed the female and male parts in agricultural and horticultural societies in different regions of the world.

In the IAASTD report on the global development of agricultural technologies and modernisation processes, we can read the following under the heading of "Women in Agriculture":

Gender, that is, socially constructed relations between men and women, is an organizing element of existing farming systems worldwide and a determining factor of ongoing agricultural restructuring. (IAASTD 2008, p. 11)

This quote is similar to the results Boserup documented in her work more than 40 years ago. She questioned the "natural" when she examined working conditions in different global regions. Boserup led the way in contextualising the division of labour as socially and culturally constructed, although she used different terminology at that time. I will return in the next section to the way she perceived the "status of women".

In the livelihood approach, we must consider all the work that is required within a community and its household units to organise daily survival strategies. Thus, we need a more holistic view that bears in mind that the activities for people's livelihoods include more than the productive sphere, which is the focus of some narrow economic approaches. Therefore, I believe that Boserup has offered us an inspiring and multidimensional concept.

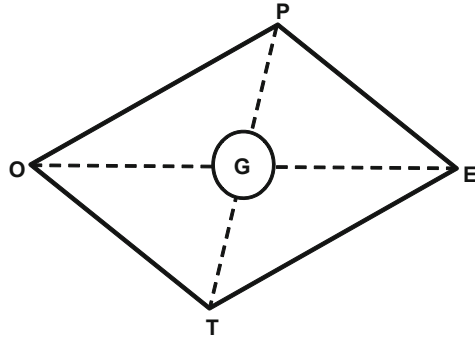
15.7 A Human Ecological Approach to Boserup

I suggest considering Boserup and her holistic approach from a human ecological perspective. As far as I know, she herself neither mentioned this term nor referred to its concepts. However, in her broad approach that explored agricultural development and social change, Boserup's arguments were similar to the ideas and theoretical framework of human ecology that were developed in the USA. The concept was introduced within the Chicago School of Sociology by Robert Ezra Park and Ernest Burgess (1921), who are known as the founders of human ecology. In the 1950s, it was studied by Otis D. Duncan (1959), followed by Amos Hawley (1971).¹⁰ The

⁹ I will not go into the debate within Anglo-Saxon-influenced gender studies that seeks to overcome the notion of polarised heterosexuality and calls for a more open view of the term "gender" to include queer and homosexual groups. This might be an interesting discussion, but for the purposes of this paper, which focuses on the global food security debate and women and gender in agriculture, I prefer to confine it to the above definition.

¹⁰ The discourse was reshaped by Catton and Dunlap (1980), who were looking for an ecological paradigm within 'New Human Ecology' in the environmental debates in the Club of Rome. In the international arena, the Society for Human Ecology (SHE) has opened a forum for international debate on human ecological approaches. In German-speaking countries, the German Society for Human Ecology (DGH) and the Institute for Social Ecology (SEC) of the Alpen-Adria-Universität Klagenfurt located in Vienna are further developing and reshaping the human social ecological frameworks and theoretical approaches.

Fig. 15.1 Model of Duncan's ecological complex. (Based on Duncan 1959)



P Population
 E Environment
 T Technology
 O Organisation

way Boserup (1981) combined technology with population growth and social organisations with agricultural changes can now easily be placed in Duncan's ecological complex.

Ester Boserup's thinking and Otis Duncan's approach have been combined with respect to demography, technology, the environment and social institutions (Fischer-Kowalski and Erb 2003; Opschoor 2002; Tremmel 2005). This chapter aims to create a new connection between Boserup's pioneering work on women in agriculture and economic development and Duncan's ecological complex. In an earlier publication, I constructed a framework with a gender perspective by combining the human ecological triangle (Steiner 1992, p. 194) and the human ecological pyramid (Teherani-Krönner 2008b). Here I want first to return to the "ecological complex" that Duncan introduced in his publication, "Human Ecology and Population Studies" (Duncan 1959) because I see remarkable similarities to Boserup's approach. In his rhombus, Duncan constructed the four human ecological components that he thought important to analyse societal changes.

Based on the human ecological pyramid by Robert Ezra Park (1952, p. 145–164; Teherani-Krönner 1992a), Duncan developed his model for comprehensive research on societies. He believed that social scientific analysis must include the interplay and interaction of the following components: Population, Environment, Technology and Organisation. This research approach became known as the Ecological Complex (Duncan 1959; Mackensen 1978; Teherani-Krönner 1992a; Fig. 15.1).

15.7.1 *Duncan's Ecological Complex*

For Duncan, these components were important for analysing what he called the "level of living" (L). He conceptualised "the level of living" as a function of the four points

of his rhombus: “ $L = f(P, E, T, O)$ ” (Duncan 1959, p. 707). The challenge is the interrelation of these components that Duncan combined in his model to address questions of social change and processes of development.

According to Duncan, a sociological “. . . account of social change is attempted by referring to such instigating factors as environmental change (whether caused by man or by other agencies), changes in size and composition of population, introduction of new techniques, and shift in the spatial disposition or organization of competing populations. The interdependence of factors in the adaptation of a population implies that changes in any of them will set up ramifying changes in the others.” (Duncan 1959, p. 683, as cited in Teherani-Krönner 1992a, p. 138)

The interrelations and dependencies within this ecological complex are important for the following processes of social change within a human ecological framework. Duncan wanted to overcome the weaknesses of other social scientific discourses because they use fewer components to explain social processes.

Malthus, of course, emphasized P, or rather the ratio, P/E, attributing only secondary importance to T and O. Marx’s theory was notable for its emphasis on O. The theoretical and empirical case for the importance of T has been presented by Ogburn (1922). (Duncan 1959, p. 707, as cited in Teherani-Krönner 1992a, p. 137)

As Duncan perceived it, the aim of human ecology is to consider all these components rather than focusing on single items and their relationships. The inclusion of these components transcends any single discipline. This integration is what Duncan sought and what he found lacking within the great theoretical discourses of his time.

In my view, we can reshape Duncan’s ecological complex as a concept of livelihood (L) and combine it with Boserup’s approaches to engender the human ecological models (Teherani-Krönner 2008b).¹¹

A gender-sensitive concept of livelihood (L) can be formulated as $L = f(P, E, T, O)G$, from a gender perspective.

I will use this model as an intermediate step because it includes and refers to the development of population and technology—questions that were similarly central to and of major importance in Boserup’s analysis. Thus, as a combination of Duncan and Boserup, I suggest the following description of P, E, T, O:

P—Population was one of the key questions that Boserup investigated. In contrast to Malthus, she demonstrated the importance of population density in developing innovative agricultural techniques and methods of cultivation and intensification.

E—Environment was the source and means of production according to Boserup. This includes agricultural land and the environmental conditions that influence the mode of production. Environmental conditions are important as the basis for agricultural production and shape the type of cultivation activities. Boserup was aware that environmental changes affect living conditions and gender relations.

When Boserup collected her data about agricultural development while she was working for UN organisations and during her stay in India in the 1950s and 1960s, ecological and environmental conditions were not recognised as being in danger

¹¹ In my empirical research on an irrigation project in southwest Iran, I introduced an engendered model of human ecology.

as they are now. With the publication of “*Silent Spring*” by Rachel Carson (1962) and the report by the Club of Rome (Meadows 1972), environmental and ecological deterioration, loss of species, soil erosion, and ecological conflicts such as air pollution, climate change, and water scarcity became more obvious, and environmental problems were added to the scientific and political agenda.

T—Technology, as perceived by Boserup, was the creative power enabling people to cope with population growth and differences in ecological settings. Technological innovation and changes in cultivation practices are how people accommodate¹² changes in environmental conditions, including population density. In other words, a certain population density is needed for a certain technology to make sense. Some pressure must exist to create adequate coping technologies. However, advanced technologies do not guarantee the wellbeing of all because they are not equally beneficial to everyone. There are winners and losers. It was Boserup who clearly pinpointed the differences that can occur between women and men when new agricultural technologies are implemented that lead to gender gaps.

Thus, in the course of agricultural development, men’s labor productivity tends to increase while women’s remains more or less static. The corollary of the relative decline in women’s labor productivity is a decline in their relative status within agriculture, and, as a further result, women will want either to abandon cultivation and retire to domestic life, or to leave for the town. (Boserup 1970, p. 53)

O—Finally, the organisation—the human arrangements or social institutions—was discussed in combination with the modes of agricultural production and the division of labour. Organisation refers in particular to the different types of agricultural practice, “from shifting cultivation to permanent cultivation of privately owned land” (ibid, p. 57), using plows and later tractors mostly operated by male farmers, that Boserup used to classify the division of labour between women and men. The gender division of labour and the productivity gap between women and men that Boserup emphasised built a foundation for social organisations and institutions. P, E, and T are the components that lead to O. Because these other components build mutual and dynamic relationships, the social organisation can also influence the other elements of the ecological complex.

Boserup underlines the importance of O regarding land policies with respect to gender relations.

With few exceptions, privatization of land leads to a deterioration in the status of rural women. Under the system of common tenure, both male and female community members had the right to use the land for cultivation either by simply farming it or by having it assigned to them by the village chief. (Boserup 1989, p. 49)

Boserup investigated the communal land systems where women had the right to cultivate land. Her position was taken up by Elinor Ostrom, who reexamined and fundamentally criticised the thesis of the “tragedy of the commons” in her work,

¹² Accommodation is the term human ecology has used to describe the interaction of human beings with their environments via culture instead of the expression adaptation, which belongs to the sphere of biology. (Teherani-Krönner 1992a, p. 92 f., 154 f., referring to Park and Burgess 1921, p. 664).

“Governing the Common” (Ostrom 1990). Ostrom was subsequently honoured with the Nobel Prize in Economics in 2009.

G—G stands for Gender or Gender Order. It is a point that I have added to the Ecological Complex. The crosscutting space of the rhombus and the core reflects the interplay between PETO components. This is a space to demonstrate and visualise what Boserup has called the “status of women” by analysing different components. With this concept, gender order as a social and cultural construction can be based on the components of the ecological complex.

I will revisit the concept in my conclusions and the following illustrations. The status of women has often been explained by referring to culture and socio-cultural backgrounds of societies. It was and mostly still is treated as a black box, somehow inaccessible to scientific investigation and analysis. However, with G in the centre of the Ecological Complex, a new space for scientific research can be discovered within human ecological studies and the related fields of research.

15.8 Conclusions

By combining Duncan’s ecological complex with Ester Boserup’s findings, we can develop a new model that helps us to engender human ecology and agricultural development. The following two sections will reveal different aspects and conclusions. They have a prospective character, introducing possibilities for further research and future development. First, it becomes possible to introduce conclusions from the theoretical models that combine PETO from human ecology with Ester Boserup’s research on women in development. These findings will help to explain what Boserup called the “status of women”. “Status of women” can become an analytical and conceptual framework for research and fieldwork, based on the PETO components.

Second, the importance of the combination of human ecology and Boserup’s approach to agricultural sciences for overcoming male bias will be discussed. Gender perspectives are essential for scientific and practical work in agriculture as well as research and teaching, including curriculum development.

First Conclusion: The “Status of Women” as a Cross-Cutting Space The gendered combination of PETO enables what Boserup called the “status of women” in the relevant areas, which is necessary for understanding the cultural attitude and position of women and men in a society. The status of women changes according to variations in PETO, as Boserup demonstrated clearly in her pioneering research. The gender aspect that she emphasised is absent from Duncan’s rhombus. We can see the centre of the connecting lines as a core and cross-cutting space. This allows us to discover a new gender dimension, which Boserup described as the “status of women”.

It is interesting to observe how, on the one hand, Boserup’s concept fits into a model of human ecology based on Duncan’s ecological complex, whereas on the other hand, it transcends the model by explaining and partly operationalising a concept that is described and discussed within human ecology and cultural ecology

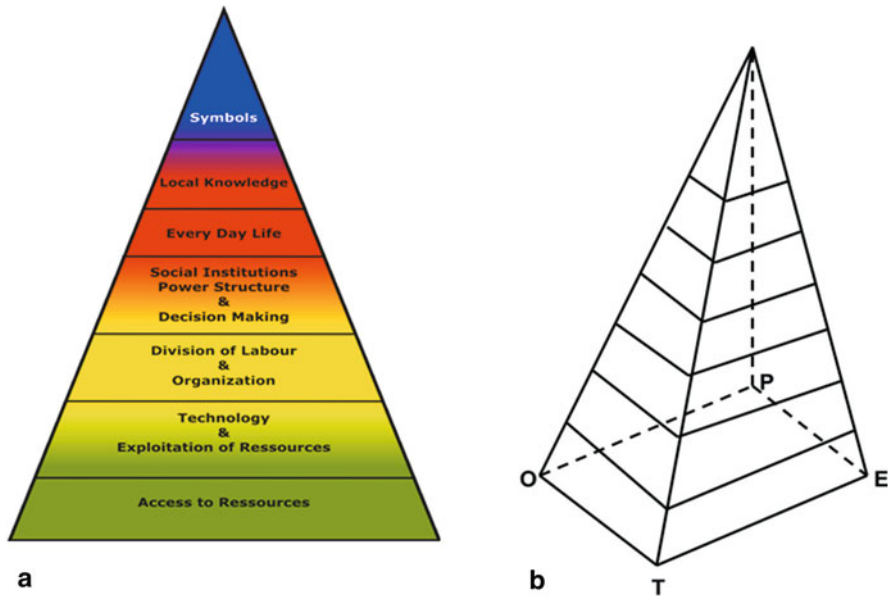


Fig. 15.2 The engendered human ecological pyramid (a), in combination with PETO (b). (Source: Teherani-Krönner 2008)

as “cultural value” or “moral order” (Park 1936/1952; Steiner 1992, 1997; Steward 1955; Teherani-Krönner 1992a, 2008a, b). With her concept of the “status of women”, Boserup added the missing dimension to Duncan’s ecological complex. Thus, she moved closer to Park, who described the ecological pyramid. The ecological order forms the basis (biotic substructure) of this pyramid. Next comes the economic order, followed by the political order. Finally, the moral order is on top of the pyramid. The last three layers are seen as a “cultural super structure”.¹³ It is the moral order—and the symbolic value system—that limits humans’ freedom of action.

On the cultural level, this freedom of the individual to compete is restricted by conventions, understanding, and law. The individual is more free upon the economic level than upon the political, more free on the political than the moral. (Park 1936/1952, p. 157)

I combined Duncan’s PETO concept with Park’s pyramid and Steward’s immaterial culture. By adding Boserup to this combination, I can perceive her concept of the “status of women” as an expression of the cultural dimension of societies. This concept of culture is founded on the components and the dynamic of PETO or on the layers of Park’s pyramid.

Of thus includes some aspects of Park’s ‘cultural super structure’. However, there is one exception: the ‘immaterial culture’ and ‘moral order’ level that encompass customs, morals and world view in Park’s work and is located at the top of the pyramid are not mentioned as

¹³ I used Park’s description of the ecological pyramid in designing the human ecological pyramid. (Teherani-Krönner 1992a).

special variables in Duncan's concepts. One can assume that these aspects are either included in the entirety of the variables mentioned or have simply been excluded and are not to be further discussed. A strict classification of the variables of the ecological complex does not need to be made in a juxtaposition of the elements from nature and culture raised by Park. Instead, one can assume that the variables included by Duncan already combine nature and culture. (See Teherani-Krönner 1992a, p. 136)

A gendered ecological complex can be designed by combining Duncan's ecological complex with Boserup's concept. The status of women or the gender order can be placed as the core and cross-cutting line in the centre. In combination with Park's pyramid and the variation of a gendered human ecological pyramid (Teherani-Krönner 2008b), a new concept of gender research in human ecology can be designed that can become relevant for development studies and gender studies. In this way, we can better understand the cultural and normative structure of societies. The symbolic structure, gender order and power relations become more comprehensible when they are grounded on PETO interplay (Fig. 15.2).

Second Conclusion: A Challenge for the Agricultural Sciences—Male Bias and Gender Blindness Therefore, we can use an engendered human ecological approach to explain the status of women. One must also consider the historical context of Boserup's work. Women's status and the gender order are often explained by "tradition" or "culture", without taking the ecological and historical context into account. Boserup demonstrated how women's status can be traced back to the history of colonial times. She charted the influence that powerful colonisers had on the mode of agricultural production, particularly in Africa. Boserup devoted an entire chapter to the "Loss of Status under European Rule" (Boserup 1970, p. 53 f.) in which she clearly addressed the problems of external interventions and power structures. This process is ongoing, as discussed in the paper on large-scale land deals (see Chap. 12 by Behrman et al. in this publication).

Even when she collected data, Boserup discovered interesting examples in which the male bias had warped results when counting the animals in a region. Only men, the expected heads of the households, were asked to provide figures. It was not recognised that women were also cattle owners and had their own animals and herds. The men correctly provided the number of their own cattle. Why should they mention the animals of the female members of the household when they had no control over them?

In many communities in developing countries, married women have, besides their land, livestock of their own. Among both the Hausa and the Fulani tribes of Northern Nigeria, women own domestic animals and men cannot dispose of them without the consent of their wives. But when the British administration made a census, by asking only the men they excluded the stock belonging to the women. . . (Boserup 1970, footnote p. 60)¹⁴

¹⁴ We might think that this empirical evidence belongs to a past period that we have now overcome. During the 1990s, I was able to evaluate the results of an irrigation project involving the construction of a dam in Iran financed by loans from the World Bank and evaluated by UNDP. The animal husbandry of the female population, their source of independent income, in the area of Behbahan in the province of Khuzestan in southwest Iran was not taken into account when planning the modernisation project for intensive crop production. (Teherani-Krönner 2008b).

Even if knowledge about WID and GAD exists, it does not appear to significantly influence decision-making processes in regard to large-scale “development projects”. Agricultural sciences and policies remain gender-blind. In other words, they look with one eye only. It is important to open both eyes to see the combined contribution of women’s and men’s activities and responsibilities in organising rural livelihoods. Apart from the many publications about women and gender issues, the FAO itself admits that agricultural policy is not yet gender-sensitive.

While the dominance of women in rural areas is evident, policymakers, planners and extension officials often behave as if women did not exist, as if the situation and needs of all farmers were the same, whether they are men or women. ‘Development policymakers are becoming increasingly aware of the crucial contribution of women farmers to food security,’ said Sissel Ekaas, Director of the FAO Women and Population Division. Nevertheless ‘gender blindness’ prevails and agricultural policies on the whole still do not address the needs of women farmers adequately. (Northoff 2011)

This is a challenge that can make use of the concept of engendered rural livelihood as introduced in this paper. Combining human ecology models such as PETO with Boserup’s approaches to women in agricultural development establishes a framework for analysing development processes towards gender-just and sustainable rural livelihoods. Such a new approach in agricultural sciences can influence agricultural decision-making and agricultural policy. This is a new approach to influencing rural development, which needs to be reshaped to overcome hunger and malnutrition worldwide.

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