

Ester Boserup: An interdisciplinary visionary relevant for sustainability

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Largely unfettered by disciplinary dogma, Ester Boserup observed human–environment relationships through an expansive analytical lens. Her ideas on agricultural change, gender, and development shook up research and practice in the mid-1960s and early 1970s and remain cogent half a century later for the development dimensions of sustainability. In this 100th year since her birth, it is worthwhile to take stock of her impact on research and practice and how her ideas continue to shape and be reshaped by current research.

Background

Born in Copenhagen on May 18, 1910, Ester Boserup graduated as Ester Boserup in 1935 with a Candidatus Politices, a degree she described as mostly theoretical economics plus courses in sociology and agricultural policy (1). She worked for the Danish government (1935–1947), during which time she gave birth to three children, and the United Nations (UN) Economic Commission of Europe (1947–1965) on agricultural trade policy. In this last capacity, she and her husband, Mogens Boserup, worked in India from 1957 to 1960, an experience that transformed her view on agricultural development. Returning to Denmark, Boserup took on consultancies and served on various commissions as she penned her most important works, at least two of which would have far-reaching impacts on interdisciplinary research and real world practice, become the subjects of intensive academic scrutiny, and led to her award of three honorary doctorate degrees in the agricultural (Wageningen University), economic (Copenhagen University), and human sciences (Brown University). Boserup was elected Foreign Associate of the National Academy of Sciences, United States, in 1989. She died in Geneva, Switzerland, on September 24, 1999.*

Agricultural Change

Boserup erupted on the international transdisciplinary scene in 1965 with her landmark book *The Conditions of Agricultural Growth: The Economics of Agrarian Change Under Population Pressure* (4). This brief non-technical work offered a powerful set of ideas in opposition to neo-Malthusian and other prevailing ideas of the time applied to agricultural development. Turned down by several publishers, her book was discov-



Ester Boserup.

ered and enthusiastically embraced by other social sciences, especially those parts of anthropology and geography dealing with smallholder (quasi) subsistence farming systems. *The Conditions of Agricultural Growth* has been published by five different publishing houses in 17 issues from 1965 to 2008 and has been translated into French, Swedish, Japanese, and Estonian.

The large and sustained impact of this work has at least a threefold explanation. First, it addressed an enduring theme—the relationship between population and environmental resources—which has regularly resurfaced in different expressions at least since the work of Thomas Malthus in 1798. Boserup challenged his proposition that the relatively slow growth in the food ceiling served as the upper limit for the more fast-paced potential growth in population. She reversed the causality, arguing that increases in population (or land) pressure trigger the development or use of technologies and management strategies to increase production commensurate with demand. Agricultural intensity, thus, rises with population density (or land pressures in related literatures) holding mediating factors constant.[†] Over the long run, this process transforms the physical and social (e.g., land tenure, labor markets, and other societal

structures) landscapes, the historical dimensions on which Boserup elaborated in *Population and Technological Change: A Study of Long-Term Trends* (6).

The endogeneity of the techno-managerial strategies of agriculture was foundational to her thesis and influenced the induced innovation thesis explaining the contemporary pathways of investment in and use of agricultural technology at large (7). Despite this, Boserup's thesis was not well-developed regarding qualitative shifts in technology (e.g., to fossil fuels) that fundamentally change land–labor and thus, structural relationships in society (8). She did trace the broad strokes of industrial technology on agriculture in sparsely populated and underdeveloped lands (6) and argued that it was not applicable to some subsistence farmers because the relative costs of labor- vs. industrial-based foods favored nonadoption (p. 120 in ref. 4). These concerns, however, were not explicitly inserted into her base thesis.

Second, Boserup's early work disputed assumptions about farming behavior applied in development. Mirroring the ideas of the Russian A.V. Chayanov, she argued that the behavior of subsistence farmers differed from commercial ones (9).[‡] Subsistence farmers responded to household (consumption) more so than market demand and sought to minimize risk to household needs, not maximize gain, affecting the allocation of land, labor, and landesque capital.[§] Farmers

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*For details on the life of Ester Boserup, see refs. 1–3 and <http://irenetinker.com/publications-and-presentations/ester-boserup>.

[†]Boserup was not the first to link land (or population) pressures to intensification (5), but she was the first to set the relationship into a conceptual model specifically aimed at agricultural change (see the work by A.V. Chayanov and C. Geertz noted in this text).

[‡]One of us (B.L.T.) once asked Boserup why she did not cite Chayanov in her own work. She replied that she had never read or heard of Chayanov at the time and explained the close similarities of their logic to the fact that both he and she were essentially drawing on the same school of economic thought.

[§]Landesque capital is a term used in human, political, and cultural ecology and land change science to refer to permanent land improvements for production, such as terrace or irrigation systems, especially among noncommercial land managers.

shifted from known techno-managerial strategies or explored innovations in them only if land–labor dynamics pressured them to do so. This production logic was subsequently shown to be present side by side or variously mixed with market behavior among many smallholder households worldwide (10–14).

Third, Boserup questioned neo-Malthusian and related assumptions permeating development practice, especially that smallholder subsistence farmers were at the mercy of their own population dynamics and in desperate need of techno-managerial assistance to intensify production. Her ideas were heard and explored by major institutions involved in agricultural and rural development, including the World Bank (15–18).

Boserup's thesis remains important today for the various subfields contributing to sustainable development. Its foundations have been tested—showing the ability to explain the variance in the intensity of subsistence-like cultivation—and variously elaborated and critiqued (10, 11, 14, 19–25). Substantial work over the past decade continues to find links between land pressures and agricultural intensification or show the rudiments of household production logic underpinning the thesis (22, 23, 26–32).

Influential ideas are rarely unchallenged and so have been Boserup's ideas. One set of critiques has focused on the paucity of attention given to societal structures and the processes underlying them for agricultural change. Boserup insisted that social structures mattered for this change and development in general but viewed them as endogenous to changes in land pressure and technology, changing over the longer term. Neither she nor the initial research she inspired explored the variance in these structures on agricultural intensity, although other potentially important factors were discussed. Much attention has been given to societal structures over the last decade (11, 13, 22–24), the results of which can be incorporated into the Boserup-inspired induced intensification thesis (24).

Induced intensification envelopes a constellation of research that has explored the roles of environment, gender, empowerment, social capital, household composition, tenure, off-farm employment opportunities, ethnicity, state policies, level of analytical aggregation, and other factors on agricultural intensification under different land pressures (23, 31–41). Relaxing assumptions imposed in Boserup's scheme, this research reveals the conditions leading to the process of land expansion (30, 42–44) or land abandonment and migration (23, 24, 27, 45–47) vs. intensification. This brings us back to the original enduring theme and articulation of those conditions leading to Boserupian, Malthusian, or other outcomes (48).

Women in Development

Drawing on field observations in India but blossoming during her subsequent experiences in Senegal, Boserup challenged development research and practice yet again with the release in 1970 of *Woman's Role in Economic Development* (49). Her thesis was so obvious in hindsight, it is somewhat difficult to understand why it was so challenging. Women have always been an important component in the practice of agriculture beyond the corporate–commercial farming systems of the world, but their consideration was missing in economic theory and development practice of the time. Boserup argued that Western-led development reduced the status of and opportunities for women. Her challenge to rectify this omission is credited, even by her critics (50–59), with helping to inspire the UN Decade for Women (1976–1985). Indeed, the UN Development Program distributed a summary of her book at the first World Conference on Women held in Mexico City in 1975, the UN's International Women's Year. A digest version of her book was distributed to all US embassies. Boserup not only anticipated gender studies, or at least their application to development, but set strong analytical standards for engaging the multifaceted realities of this research and provided the foundation for the Women in Development (WID) perspective. WID has received so much attention that development practice has lost sight of men, according to some views (60). *Woman's Role in Economic Development* has been released by five publishers in seven issues from 1970 to 2007 and has been translated into French, Spanish, Italian, Swedish, and Indonesian.

Boserup and WID observed that women were discriminated against at all levels of the development process in the 1960s and 1970s (61). Boserup and WID did not reject the modernization effort for this omission. Rather, they argued for women to be made an explicit part of the development program, while paying attention to cultural variations regarding women's productive roles. Drawing on historical data, Boserup argued that economic development created a gender gap (female equity) that evolved in a curvilinear manner. Modernization initially enlarged the gap owing to economic changes that disintegrated established household relationships, but it subsequently closed the gap, especially owing to increased women's education. It is this facet of WID that continues to draw considerable research attention. Some field-based tests support a proposed curvilinear relationship, or parts of it, whereas other studies suggest a linear relationship in which the gap is not closed (52, 62–64).

Almost in passing, Boserup speculated in the conclusion of *Women's Role in Economic Development* (pp. 224–225) that increased education for women in

the developing world might reduce family size. This observation thrust Boserup into the UN World Population Conference in Bucharest in 1974 and subsequent international programs addressing population. Interestingly, demographers would subsequently show that drops in the fertility rates worldwide track with the level of women's education (65, 66).¹

WID and Boserup continue to draw attention from alternative views within gender studies at large. Critique holds that WID is, at its base, a “neoclassical economic construct,” which is insufficiently nuanced and too focused on questions of education within the modernization paradigm (51, 58, 67). WID is accused of failing to consider domestic production and isolating reproductive from productive work (51, 68, 69). If this challenge is applicable for WID, it seems odd to extend it to Boserup, if only by implication. After all, her agricultural interests were directed to household or domestic production, and her gender gap is predicated on understanding that modernization disrupts established household gender roles, which includes reproductive and productive elements. Regardless, these and other critiques gave rise to Women and Develop (WAD) and Gender and Develop (GAD) counterviews.

Both WAD and GAD view women as active agents in the production and development process and reject their former omission in the modernization project as inadvertent (51, 68, 70). WAD champions a socioeconomic class view in which unempowered men share the same unfavorable fates in the development process as do most women. This shared position, WAD argues, changes only if international social structures change. GAD, in contrast, views the roles assigned to both sexes not as given but as a social construction, and thus, the organization of women in changing their roles is a central issue in development. The inequalities of modernization must be addressed through structural changes, specifically political ones, because the institutions discriminating against women may be impervious or highly resistant to economic development (51, 58, 69, 70). Recent studies treating themes embedded in WID, WAD, and GAD suggest that elements of all three are useful for the question at hand (71).

What might have been Boserup's response? First and foremost, she was versed in both normal science and critical theory. Although her professional lens was large, she remained firmly anchored in science and attempted to enlarge or expand economic analysis rather than replace its science base with alternative explanatory perspectives. Boserup explicitly recognized the role of societal structures in the development process. She differed from WAD and GAD positions, perhaps, in that

¹Critiques of the fertility–education relationships remain (67).

she viewed structural change as taking place over the long term and as endogenous to the development process: “structures change under the influence of other structures although they may be resistant to such changes for shorter or longer periods, and are changing only when the pressure is strong or persistent” (p. 58 in ref. 1). Boserup encouraged economic development research to incorporate this broader and historical view, even providing a framework for it (72).

Appreciating an Innovative Scholar

Few social scientists of the last half of the twentieth century can match the impacts that Boserup has had on interdisciplinary

research and outreach practice, especially regarding human–environment relationships in a development context. Indeed, an even smaller number have drawn the attention of researchers and scholars holding such a large range of worldviews. Without writing a formula and rarely constructing a diagram, her conceptual or informal models of agricultural change and women’s role in development have been formalized, tested, and retested, and they remain significant for research and practice. Her insights were gained by a comprehensive observational lens, the parameters of which were not bound by disciplinary tenets. As she noted, long-term development analysis must be “interdisciplinary and their authors need to follow major developments in some

other disciplines than their own” (p. 59 in ref. 1). In this sense, Boserup’s approach remains as important for contemporary sustainability science as do her theses about the sustainability dimensions of agricultural change, women, and development.

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