ISSN- 2394-5125 VOL 7, ISSUE 02, 2020

New limits in Agricultural Geography

Arun Santra
Email-arunsantra682@gmail.com

Abstract
The recorded history of human geography was illustrated by agriculture as a core subject of the study at many points, but it has also led to the disciplinary transition since 1970. The geography of agriculture has evolved its principles and interests, paralleling some facets of the larger field. This shows how the efforts over the last two decades to analyse improvements across the entirety of the agrifood system (from supply, development, consumption) have contributed to a more problem-oriented agricultural geography. There is debate about the use of broad, general principles that are built in terms of episodic innovations for farming and the agrifood system. The various diets have been identified, and the potential transformations between productivism, post-productivism and multifunctionality have also been recognised. After reviewing the definition, the essay reflects on many major problems, or main issues, on which agricultural geographers are adding new knowledge, including closely related topics such as food preservation, land acquisition and climate change adaptation.This study captures the current limits on agriculture.

Keywords: Agricultural geography; Food regimes; Productivism; Multifunctionality; Land grabs; Climate change adaptation.

1. Introduction:

Nature contributes to numerous aspects, including biodiversity, and ecological goods and services to the global human community's support and health [1][2]. The earth faces rapid and anthropogenic environmental challenges around the same period, including climate change and ecosystem change and the global biodiversity crisis, marking the Anthropocene's transition to the modern age [3]. These trends reflect a global problem, leading to the growing deterioration or elimination of the environment and its social welfare consequences, such as good environmental efficiency, nutritional security, clean air and water, food, and energy[4][5].

In consideration of incorporating the Marxist content, the initial contribution to the agrifood mechanism's scope was made with human geographical methods known as the "political economy"[6]. In this pioneering area, Piers Blaikie's research (1985) has been focused on social ties of growth and its effects on land use in developed countries by means of the political economy of soil decay. There are two kinds of social ties in the farm household: local and national, which are becoming increasingly frequent in the region. In reality, a growing understanding of the importance of foreign ties and networks in agriculture geography played an important role without being explicitly linked to any of the Marxist views that defined a political-economic approach. The agricultural geography was composed of four key elements[7]: (1) uneven development (which hits capital at different rates) (2) spatial and historical characteristics (which demanded the study of real locals to recognise the mechanism of unfair development), 3) Family farm review (in which it was recognized that the basis of agricultural production differs from that of other sectors of the economy).; 4) State policy's position (where governments have both supported the family farm but also permitted some penetration of agriculture by corporate capital)[8].In that approach, the primary research priority was to expand agri-business, restructure agricultural goods, and develop and regulate diversity in social and cultural relations. In the 1990s, many prominent critics were made of political-economic methods, especially regarding their main focus on growth, macroeconomic conditions and structural processes, and violent farm families decision-making[9]. However, the major food sector was connected to the theory that the industry improved today's agriculture. The key subjects of this essay were the work on food regimes, control theory and the re-establishment of "agrarian issue,"

2. Food regimes:

Farming geographers offered their own description of the episodic changes that were heavily featured in Marx's texts and are correlated with the shifts between a series of governing systems. These developments were recognised in food regimes that connected food production and consumption of foreign relations from the 1870s to redistribution and control modes under capitalist systems[10].

The first regime was the 1870s-to World War I : Governments focused on worldwide grain and meat production, which included exports from family farming in the New World and were related to national-structural expansion. The second was from the 1920s-1980s (with regard to sustainable food production for the mass market, decolonisation, consumerism, and the growth in agricultural forward and backward links); It also concerns the globalisation, economic legislation and rise of 'green'consumers[11]. In this third regime, the

ISSN- 2394-5125 VOL 7, ISSUE 02, 2020

introduction of new goods often intended for export sales has also been made possible in regions in which "traditional" commodities such as grain, wool and chilled meat were manufactured for the world market.

The diets converge, and the third regime begins to evolve, including opposition movements such as globalisation and biodiversity, involving a dynamic and conflicting combination of biotechnology, fast-foods, organic farming and local food consumption[12]. They also provide extensions to the second regime's technologies such as biotechnology and chemical usage, e.g. for the simulation of naturalness and fruit maturation regulation.

Food regimes are critical of their lack of explanation, their absence of the human organisation, their over-reliance upon developing world realities, their disrespect of national regulatory mechanisms and their high degree of abstraction[13]. However, in contemporary world agriculture, new divergent developments are being highlighted: globalisation and dependence on industrial practises ties the resistance of consumer-led movements that support healthy, local, and sustainable organic food and food production[14].

Agricultural geographers have established, in addition to the debate about food regimes, another view of episodic shifts in agri-food systems in terms of the assumption of a similar parallel of the change from Fordism to highly developed economies in the 1940s-1960s which extended Henry Ford's automotive and production line works. In part, it takes the shape of the transition from productivism to post productivism [15][16], including the adjustment from separate working and processing systems, different production ties and changes to production regulations [17], which involves a shift from the second food regime to the third one.

3. Productivism:

Productivism is primarily characterised by worldwide industrial agriculture since 1945and has led to significant production developments in technology, mostly promoted by the state by research and advice services [18]. One of the best State funding indicators to sustain healthy farming communities and raise yields is the European Agricultural Strategy (CAP). However, the European Union (EU) Unintended impacts included a significant transformation of production with less firms, increasing agricultural debt, adverse environmental effects, and a wide heterogeneity between farms and regions[7]. The regional portion of agriculture within the CAP also becomes clearer and is related to agri-business between small family farms, often marginal, and larger, highly capitalised farms. The former is tending to focus on areas that havethe favourite physical requirements for cultivation while the latter is occupied by upland and mountainous areas.[19] This helps one examine the extensive agricultural retreat from such areas at the Mediterranean and atlantic fringes while intensification occurs in irrigated areas. In the CAP, the economic situation is favoured by clear funding and benefits to farmers, which also determine farmers' behaviour, e.g. with the use of production quotas. It has proved fertile grounds for geographical investigation for these steps' spatial implications, especially for the numerous reforms that were carried out, beginning with the so-called MacSharay reforms of 1992. Similarly, the EU's expansion has provided new geographical research opportunities, especially on land reforms in Central and Eastern Europe that promote agrarian modernisation. Other researches have analysed changes to the relationship between farmers and the Governments, through the macro-political changes in world trade talks and the formation of the World Trade Organization [20].

4. Post-productivism:

In the early 1990s the term "post-productivism" was first used to refer to such reactions to negative results viewed by productivism. Bowler's (1992) conceptualisation meant a shift in impulses to escalate, focus, and specialise output with enlargement movements, decentralization, and diametrically opposite diversification. Post-productivism is defined as a change from quantity to quality in food production, as the emergence of AFNs as part of farm multicultural activities[23], as well as State efforts to encourage returning, through agri-environmental policies, more conventional, sustainable agricultural systems; increasing environmental regulation of agriculture; and advancing with AFNs [22].

Bowler's (1992) conceptualisation meant a shift in impulses to escalate, focus, and specialise output with enlargement movements, and diametrically opposite diversification. The post-productivism was described as a change from quantity to high quality in food production; growth of the alternative farms and network (AFN) in multiple farm activities [21][22]; efforts by the government to encourage a return to more traditional and sustainable farming through agri-environmental policies.

5. Multifunctional agriculture

5.a) Theorizing multifunctionality

In the past decades, there have been calls for an alternate conceptualisation called multifunctionality, to move from efficiency to post-productivism. It refers to the multiplicity of roles played by agriculture; it has both a primary role in the development of food and a supplementary commercial, environmental and socio-cultural role in rural areas[24][26]. The word "non-goods," as well as resources and food values, is used to recognise the

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agricultural systems contain. It recognises that agriculture has a range of roles and effects that should all be acknowledged and celebrated, since they also support society, for example by contributing to ecology, environment and rural society. Farming provides food and fibre and leads to favourable environmental and ethical effects, as well as to other commodities that are not typically of known financial importance, such as rural society and its traditions, travel, and landscape protection. Political decision-makers increasingly understand these multiple functions and help create and maintain rural and ecological environments and sustain rural communities, especially in marginal or peripheral areas.

Wilson (2007) saw the transition from a dominant concern for food and fibre production into the current "regime," which embraces wider interest, for example nature production and leisure spaces. Although some farmers do work to manufacture conventional agricultural products, such as grain and beef, many are now called ecosystem administrators, tourism suppliers, and service providers, i.e. multifunctional products and spaces. This shift goes far beyond conventional farming concepts, but is part of a move from productivism to post-productivism. Wilson (2010) also argues that a strong multifunctionality is created at the junction between fiscal, environmental and social factors and can create resilient rural communities [25].

5.b) Environmental and ethical multifunctionality:

While labels like "weak" and "strong", which reflect the degree to which farms vary from just food and fibre processing, production may also be carried out in a variety of scenarios, some highly efficient while others consider other issues like providing environmental and societal benefits. Via agri-environmental policies one means of achieving multifunctionality is directly pressuring farms to be 'environmentally friendly.' They also fall within the realms of improving some of productivist agriculture's worst adverse environmental externalities, but others have contributed to landscape conservation that is substantially more prominent in farm decision making. Multifunctionality should also be correlated with biodiversity principles by integrating economic and social efforts to accomplish ecological system restoration roles [27].

6. Topical concerns in agricultural geography

Given the spatial constraints, the previous broad overview of the conceptualisation by agricultural geography of long-term changes in the agricultural food system, especially using European examples, must be considered. Chinese researchers have made an important contribution in the last two decades. Still, little systematic dialogue on farming geologists' work in solving global problems or concerns relevant directly to agri-food systems in the industrialised world has been noted. This section aims to address this balance by focusing temporarily on three recent subjects which are specifically related to the current field research and thus use the words 'limits' in the heading of the article.

6.a) Food security

A rising emphasis on food safety issues has become an increasingly significant feature of agricultural geography over recent years. This represents worldwide anxiety about food security and access to food for some parts of population, not just at national level. In the last few years, though, there have still been fears about new food-related problems in the developed world that the vast proportion of people in developing countries remain on the brink of malnutrition. Last but not least, there is so-called 'food scarcity' [28], over intake contributing to a massive raise in the proportion of people with obesity and the need to prepare national food deficits against climate change, economic disruptions and other threats [29]. Sir John Beddington, former Chief of the UK Government's science advisor, referring to the worldwide effect of the ongoing population development, progress, and ecological disruption, has described the ongoing challenges to global food security as "the perfect storm."

6.b) Land grabs in the 21st century

One component of food security issues can be seen in the rise in land grabbing. In the 19th century, the motivating word "land grab," especially the so-called scramble for Africa, was applied extensively to Western powers' imperial aspirations. Its recent use dates largely from the 2007–2008 crisis in the global food price[30], contributing to heightened worries regarding food safety in the developing world. In the global South, large-scale agriculture investments focused on food processing, biofuels production, and access to water supplies in some situations.

Land acquisitions denote contested large-scale acquisitions of land, usually but not necessarily by transnational non-local corporations, financial institutions, governments and individuals. The purchases include consolidation of plantations owned by foreigners in food-unsecured countries as well as the so-called 'green grabbing' of clean energy land and other natural resources. Some of these 'grabs' represent modern ways of accumulation of capital in southern rural areas. In the transactions, the banking sector has become a big player, with influential SWFs. Since the so-called global food crisis of 2007-08, SWFs' relevance as a key engine of land grabbing has increased. Global food prices rose drastically and led to political and economic instability[31].

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7. Agriculture and climate change

One of the world's biggest threats to food sustainability is climate change, which has potentially had impacts on agriculture over at least the past three decades in substantial work by geographers. Input from physical geographers and remote sensing experts and the geographical sciences of knowledge (GIS), who model the future's possible climate features, has been the subject of many original geographical studies[32]. This modelling of atmospheric circulation shows that global agriculture, with extreme impacts in lower latitudes, is likely to experience major negative consequences from climate change. Some claim that adverse reactions can now be seen with a decline of 5.5%, as well as of 3.8% since 1980 in the average rates of wheat and maize[34]. In fact, agriculture is both a significant contributor to the development of GHG as well as a negative effect of climate change. It accounts for between 19% and 29% of total emissions directly (i.e. N2O and CH4) and indirectly as a result of agricultural land coverage shifts (CO2). This emission also rises by about 1% annually [33].

Broader climate change considerations include research into relevant environmental justice challenges, stressing food security where rural communities rely particularly on poor or non-existent food markets. Successful adaptive planning could be constrained, but reasonable policy principles have been suggested, considering insufficient awareness of the nature of regional and local climate change. Any of these are part of climate-smart cultivation.

8. Limits in agricultural geography in India:

'Slow agricultural development is a matter of concern for political decision-makers since about two-thirds of India's population rely on rural jobs for a lifetime. Current agriculture practises are neither economically nor environmentally viable, with Indian yields for a large range of agricultural crops being poor.

"With a population of just over 1.3 billion, the nation is the largest democracy in the world. In the last decade, the country saw rapid economic development, emerged as a major competitor with the world's fourth-largest buying power parity market, and advanced towards achieving much of the MDG's.

A 2003 study by the Food and Agriculture Organization of India on agricultural development from 1970 to 2001 established structural problems in Indian agriculture. In the six-year section 1970–76, 1976–82, 1982–88, 1988–1994, 1994–2000, the average increase in food staple was 2.5, 2.5, 3.0, 2.6 and 1.8 percent annually. Corresponding analyses of the overall agricultural output index indicate a common trendshowing a growth rate of just 1.5 percent a year between 1994 and 2000.The greatest challenge for farmers is the low cost of their farms. A recent study has shown that effective pricing, focused on output energy and equating agricultural wages with industrial wages, will serve farmers well.

9. **Infrastructure**

India has very weak rural routes that impact the timely provision of inputs and the convenient transfer of goods from Indian farms. Irrigation schemes are ineffective, resulting in crop failures in some world regions due to water scarcity. More than 30% of farmers' produce is ruined by regional flooding, low seed quality and inadequate planting, lack of cold storage and spoilage, and the lack of organised retail, as well as competing purchasers, thereby diminishing Indian farmers' capacity to sell the surplus and commercial crops.

The Indian farmer earns just 10% to 23% of the price that the Indian customers pay for precisely the same commodity, with delays, inefficiencies, and intermediaries. Farmers in Europe and the United States in industrialised economies earn 64 to 81 percent.

10.**Productivity**

While India has gained autonomy in food staples, its farms' output is below that of Brazil, the United States, France and other countries. For example, Indian wheat farmers yield approximately a third of wheat per hectare relative to France's farms. In India, rice productivity was less than half that in China. Similarly, other staple productivity in India is poor. Indian overall productivity factor rise stays below 2% per year; in comparison, China's overall productivity factor improvement is roughly 6% per year, while China still boasts smallholder farmers. Several studies indicate that India will overcome its starvation and hunger and become a major food supply globally, achieving production comparable to other nations. In certain countries, however, indigenous farmers generate the highest yields for sugarcane, manioc and tea. Crop yields differ markedly across Indian states. Some states grow 2 or 3 times the volume of grain per acre.

As the chart reveals, the northwest (Punjab, Haryana and Western Uttar Pradesh), the coastal districts on both the coasts, west Bengal and Tamil Nadu are the traditional high agricultural productive regions of India. There has been fast agricultural development in Madhya Pradesh, Jharkhand, Chhattisgarh in Central India and Gujarat in the West in recent years. Table 1 contrasts the average national prices for some of India's main crops, for 2001–2002.

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Crop	Average farm yield in Bihar	Average farm yield in Karnataka	Average farm yield in Punjab
	kilogram per hectare	kilogram per hectare	kilogram per hectare
Wheat	2020	unknown	3880
Rice	1370	2380	3130
Pulses	610	470	820
Oilseeds	620	680	1200
Sugarcane	45510	79560	65300

Table 1:Comparision of the statewide average yields for a few major crops in India, for 2001–2002.

No single Indian state is better for all types of seeds. In rice and sugar cane, Tamil Nadu received the maximum prices, Haryana in weeds and coarse grains, Karnataka in cotton, Bihar in pulses, and horticulture aquaculture, flower, and fruit plantations than other regions. These variations are based on local infrastructure, soil quality, micro-climates, local capital, farmers' expertise and innovations. The Indian food delivery scheme is extremely inadequate. The movement of agricultural products is strongly regulated, and the States and even inter districts limit the selling and movement of agricultural commodities. One study indicates that Indian agricultural policies could concentrate more on the improvement of rural infrastructure mainly in the context of irrigation and flood-control infrastructure. Cold storage, hygienic product processing, and effective new supermarket facilities to minimise waste will also increase production and rural revenues.

Low productivity in India is a result of the following factors:

- The typical land assets are very limited (less than 2 ha) and are divided by land ceiling actions and, in certain instances, family conflicts. These small farms are frequently overcrowded, contributing to clandestine unemployment and poor labour efficiency. There are claims that smallholder farming does not trigger low productivity because productivity in China and many emerging economies are higher while China's smallholder farmers account for more than 97% of its farming population. A Chinese small farmer can rent his land to large farmers. China's integrated retail and comprehensive Chinese roads can provide its farmers with requisite incentives and infrastructure for sharp increases in the field's productivity.
- In contrast to Green Revolution approaches and innovations, implementation of new agrarian techniques and use of technologies is insufficient, discouraged by a misunderstanding of these activities, high prices and impracticability in the case of limited land holdings.
- According to the World Bank, Indian Agriculture and Rural Development Goals, India's agricultural subsidies hamper production. This appraisal is primarily based on a growth agenda and takes little consideration of environmental consequences. From a neoliberal perspective, over-regulation in agriculture creates a price hike, price instability, and volatility as government interference in the labour sector, property, and credit markets. The facilities and utilities of India are insufficient. The World Bank also notes that water allocation is ineffective, costly and unequal. Infrastructure for irrigation is declining. Overpumping aquifers protect overuse of water, but since they decline by one foot a year, this is scarce. The Intergovernmental Commission on Climate Change has warned that food protection in the area could be a major concern after 2030.
- Following are the deterrents: Analphabetic, general socio-economic backwardness, sluggish progress in introducing agricultural reforms and ineffective and inadequate financial and marketing resources for agricultural goods.

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- There is an inconsistent government policy. Agricultural and tax incentives are frequently adjusted for short-term political ends without warning.
- Irrigation facilities are insufficient, as seen by the fact that only 52.6% of the land was irrigated in 2003–04, resulting in farmers still depending on the precipitation, particularly in the monsoon season. A strong monsoon contributes to vigorous economic development, although weak monsoons contribute to slow growth. Farm loans are governed by NABARD, which in the subcontinent is the legislative pinnacle of rural production. Around the same moment, over-pumping by subsidised energy contributes to an unprecedented decrease in water levels.
- One third of all foods manufactured rot due to dysfunctional supply chains and the ways to increase the productivity of the "Walmart model" are prevented by laws against retail foreign investment.

11. Diversion of agricultural land for non-agricultural purpose

The 2007 Indian National Farmers' Policy claimed that "prime farmland must be conserved for agriculture except under exceptional circumstances, provided that the agencies that are provided with agricultural land for non-agricultural projects should compensate for treatment and full development of equivalent degraded or wastelands elsewhere" The policy proposed that land with a poor or non-farmable return could, as far as practicable, be reserved for non-agricultural uses such as construction, industrial parks and other commercial growth.

Amartya Sen gave a counter-view claiming that "prohibiting the use of agricultural land for commercial and industrial development is ultimately self-defeating." He contended that farmland could be better suited to non-farming if the value of a commodity created by agriculture is provided more than many times by industrial production. Sen proposed that India will have to introduce manufacturing industry anywhere there are benefits of production, business needs, and the choice of management, developers, technological experts and unskilled labour, due to schooling, healthcare and other facilities. He claimed that the market economy could decide the efficient allocation of land rather than the government's soil allocation.

Conclusions:

Agriculture is a linked and integrated field that can affect the transition to sustainable growth and ease global environmental changes. It is clear that dramatically changes are required to reduce its worst repercussions and to optimise the possible benefits of reconsidering the space-time size and diversity of farm management in traditional agriculture intensification. To restore the global environmental destruction of agricultural fields to a balanced setting, nature-based interventions, including those under the umbrella of ecological intensification, must be at the forefront of the future farm management and the food system as a whole and of the supply chains. This does not exclude the role of new technologies which contribute to optimising and promoting increased development. However, future technology should be introduced in a systematic approach alongside natural solutions. It is also important to stress that with a vast socio-economic and ecological heterogeneity worldwide, no approach can be uniformly available. Therefore, a potential farm system should be made to provide a set of options implementable in each context in the most effective but environment friendly and durable way.

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