Agroecology and Circular Economy in the Institutionalization Context

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The Farm to Fork Strategy that lies at the heart of the European Green Deal states that "the COVID-19 pandemic has underlined the importance of a robust and resilient food system that functions in all circumstances and is capable of ensuring access to a sufficient supply of affordable food for citizens" (European Commission, 2020). In the Strategy, agroecology and circular economy, amongst others, are referred to address the food system issue that is one of the grand challenges of sustainability. This article investigates these two, with a special focus on institutionalization. Although the field of focus and institutionalization context differ, they share common principles and practices in the food system. As

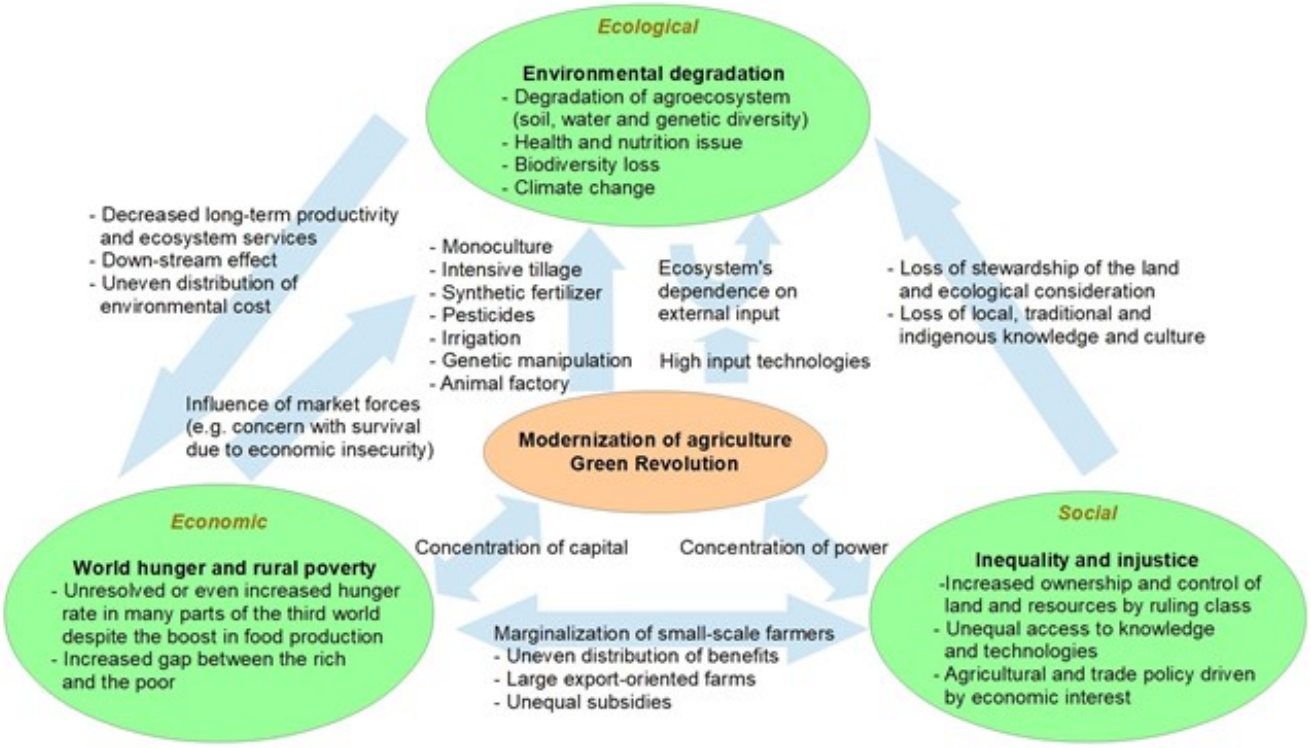
plural discourses within and among disciplines give them complex characters, the examination is conducted in relation to institutionalization and related practices, drawing on the methodology of Hajer (1995). By clarifying the differences and nexus between the two in the sight of social and political dynamics, this article seeks a rationale for further integration.

Agroecology: integration between science and movements

Agroecology can be understood as "a science, movement and a practice" (Wetzel and Soldat, 2009) although interpretation varies. Agroecology started as the science of ecology applied to agriculture in the early 20th century, and the number of publications significantly increased in the 1980s when the first academic programme was launched, and the integration with social movements, primarily with small-scale farmers, started (ibid). In the 1990s small-scale farmers in Latin America increased by 220 million despite the global expansion of large-scale industrial farms (Altieri and Toledo, 2011). La Via Campesina, a supporter of agroecology, was founded in 1993 and they presented the concept of food sovereignty at the World Food Summit in 1996.

Especially in the context of disputed rural areas, agroecology became a slogan for the movement (Rosset and Martinez-Torres, 2012). The issue involves "ecological distribution conflicts" (Martinez-Alier and O'conner, 1996), and economic distribution conflicts. Figure 1 shows the problem framing of agroecologists Gliessman (2007) and Altieri and Nicholls (2005) that centres on the distribution conflicts. Agroecology provides a systemic solution for the inter-related issue, focusing on the optimization of traditional farming systems built upon farmers' knowledge.

Figure 1. Inter-related issues of the global food systems: based on Gliessman (2007: 3-22) and Altieri and Nicholls (2005: 13-28)



In 2009, the International Assessment of Agriculture and Science & Technology for Development (IAASTD) published a report. Mendez et al. (2013) described plurality in agroecology and discussed that this publication marked the "inclusion of agroecology at a higher policy circle". An identical set of concepts and storylines by the agroecologists are found although there are differences. "Product of argumentative interplay" (Hajer, 1995) among actors can be found throughout the report.

In 2013, United Nations Conference on Trade and Development (UNCTAD) published a review. Its lead article by Hoffmann (2013) uses a narrative identical to IAASTD although it prioritizes the development objectives and promotes neo-liberal policy, which represents a counter-position to the agroecologists. As briefly outlined in table 1, a close examination of agroecological discourse, IAASTD publication, and UNCTAD review, along with the pre-existing discursive order, would reveal how agroecology has influenced the IAASTD publication and re-shaped the discursive order.

Table 1. Ontological and epistemological variation among agroecology, IAASTD publication, and a review by UNCTAD Secretariat

	Agroecologists	IAASTD	UNCTAD
Authors	Gliessman (2007); Altieri and Nicholls (2005)	400 co-authors (2009)	UNCTAD Secretariat: Hoffman (2013)
Ontology			
Emblematic issue	Green Revolution, modernization of agriculture	Business as usual	Climate change
Prescriptive metaphor	Agroecology; systems approach	AKST; multi-functionality; sustainable development	Multi-functionality; climate-friendly agriculture; pro-poor development; ecological intensification
Human-nature relation	Farmers as stewards of land; co-evolution of society and nature	Farmers as producers and managers of ecosystem; natural resource management	Farmer as producers and managers of agro-ecosystem
Food Sovereignty	Rights of people	Right of people and sovereign states	National food sovereignty
Epistemology			
Generation of knowledge	Integration of knowledge system (indigenous, traditional, local knowledge and sciences)	Indigenous, traditional, local knowledge as integral part of AKST; participatory co-production of knowledge	Focus on science and technology
Dissemination of knowledge	Participatory research, Farmers to farmers	Participatory research	N/A

IAASTD covers several important categories of agroecology, which are often found in the current legal frameworks. Herren (2020) discussed that "IAASTD has strongly influenced Sustainable Development Goals". Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2019) stated that IAASTD contributed to the scientific understanding of the inter-relation between agriculture and biodiversity. Intergovernmental Panel for Climate Change (IPCC, 2019) recognized the systems approach. Moreover, the High-Level Panel of Experts on Food Security and Nutrition (HLPE, 2019) published a report dedicated to agroecology, which formed one of the bases for the Farm to Fork Strategy.

Circular economy: the building block of the Green Deal

The definition of circular economy varies but the core ideas are "regenerative and restorative system of production and consumption, which closes the input and output cycle of economy" (Friant et al, 2020); production-consumption system that maximizes the service produced from linear material and energy flow by using cyclical material flow, renewable energy, and cascading-type energy flow (Korhonen et al., 2018). The practical focus is on the recycling of waste and by-products where value embedded in the material is utilized most effectively.

Especially, recycling of biomass in the food system has a large potential, not only for the food systems but also for the cross-sectoral applications.

Korhonen et al. (2018) identified the most influential roots of circular economy as eco-effectiveness by McDonough and Braungart (2002), and the industrial ecology concept, although emphasized that the private sector and governments played a major role in the institutionalization. As to circularity discourse, Friant et al. (2020) similarly discussed that "public policy predates most academic research".

Internationally, it has been discussed in the domain of Sustainable Consumption and Production (SCP) as a tool for decoupling economic growth from resource use. Academic publications focusing on Europe increased in 2012 when the Ellen MacArthur Foundation formed a coalition with European Commission's DG Environment (Schultz et al., 2019; Leipold, 2021). The coalition revived the circular economy to address resource scarcity, long-term competitiveness, and limited space for landfills (Leipold, 2021). Especially with the economic crisis in 2008, the circular economy caught the attention to turn environmental burden into economic opportunity. In 2015, the Ellen MacArthur Foundation's report was presented at the European Commission and the EU adopted the first circular economy action plan, paving a path to Green Deal in 2020.

Whilst maximizing the cyclical flow of material and energy would reduce the extraction of resources and bring economic and social benefits, there are criticisms about the lack of academic consensus. Niskanen et al. (2020) illustrated the cases of resource extraction where businesses use the circular economy to maintain their image despite local conflicts and discussed that ambiguity of circular economy is a "floating signifier" that can be used both in a sustainable and unsustainable way depending on the practice. However, large-scale implementation accompanies a substantial change in the social practice, creating dynamics in individual awareness and behaviour, which in turn constitutes, reproduces, and transforms structural forms (Jones and Murphy, 2011). Schultz et al. (2019) emphasized the importance of social practices in sustainability transition and discussed that by changing routines in economic processes, business and community actors re-interpret the practice, and thereby establish a new institution. Although the target group is focused on the private sector, other actors are also influenced, and further incentivization could help activate regional dynamics.

The narratives of the circular economy have been created to transform the EU policy discourse from within although eventually perpetuated ecological modernization (Leipolod, 2021). However, academic discourse and integration could help re-shaping it. Blomsma and Brennan (2017) discussed that the circular economy offers a new framing, and it can create relations between existing concepts. Agroecology can be one possibility for such integration, especially in the field of the bio-based circular economy.

Nexus between agroecology and circular economy

Agroecology emphasizes socio-ecological transition while circular economy focuses on socio-technical transition. Agroecology is originally targeted at small holders while the circular economy is rather targeted at larger businesses. Despite the differences, they share common practices: recycling of nutrients, energy, and wastes, bio-refinery technology, biogas production, composting, utilization of by-products at the food processing, redistribution of food waste, and short food supply chain. Some projects that are framed under agroecology fit well into a circular economy, and vice versa. For example, agroecological symbiosis (AES) integrates farms, food processors, and energy producers in a way that maximizes the circular flow of biomass and energy (Helenius et al., 2020).

Farm to Fork Strategy locates at the political nexus. It recognizes agroecological practice and partnership, and simultaneously, precision agriculture that promotes large-scale monitoring towards the digitalization of agriculture. European Coordination Via Campesina (2021) recognized “a shift in overall vision” especially in the concepts surrounding food sovereignty. Important concepts of agroecology are found: involvement of all actors in the food chain; ensuring livelihood for primary producers; dietary shift; shorter food supply chain; consideration for the countries of production; reducing dependency on external input.

Conclusions

Both agroecology and circular economy have plural discourses, and these terms function as metaphors in the discourse where interpretation varies. Furthermore, identical practices are often framed under different concepts. Understanding the context of social and political dynamics would provide various implications, although it is a process that entails ontological plurality that is inherent in the

global sustainability issues.

Agroecology is a way to address the complex inter-related issues while activating regional dynamics. Their discourse is rooted in academic development and empirical evidence on the one hand, and in the decades of local struggles and its post-development discourse on the other, which goes beyond ecological modernization. It has its foundation in globally spread agroecological practices and movements. In the political arena, agroecology as a prescriptive metaphor tends to vanish by merging into the existing discursive order of ecological modernization, and instead, it is often presented as a practice. However, its political influence seems extensive. This paper has in part implied how agroecology has contributed to re-shape the discursive order in the domain of agriculture and food security and the wider sustainability fields. The circular economy has been adopted to turn environmental burdens into economic opportunities. It is backed by the business practices in the innovation context. It is a strategically placed metaphor to redirect the discursive order in the domain of SCP and beyond. Although from the beginning its priority included economic competitiveness, the resulting changes in practice and further academic development could re-direct itself to stronger sustainability.

The technological aspect of circular economy and its cross-sectorial application can complement agroecology, however, its accessibility and suitability for small-holders need to be taken into consideration. The circular economy's approach to ecological consideration is rather indirect. Without addressing the technological fix of ecological modernization, the potential of circular economy would not be fully utilized. Even though there are contradictory discourses within and among disciplines, an endeavour for integration would open up further discursive space. Recognizing and understanding the plurality would be a prerequisite for effective integration.

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