



The Power of Social Capital to Address Structural Factors of Hunger

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1. Introduction to the Problem of Hunger as a Problem of Lack of Theory

Hunger has not yet been defeated, despite the considerable progress made in science, technology, and business development in the last 70 years (IAASTD 2009). In this essay, I argue that the local social capital, particularly in the Global South, is a neglected factor by science, economy, and politics, explaining the slow progress made by humanity towards achieving food security, resilient food systems, and the transition towards “Zero Hunger”. Hunger creates social unrest and revolution. From a human rights perspective, it remains a scandal in this world of plenty and food production exceeding the needs of the world population, at least when caused by structural factors that political measures could correct it (Orr and Lubbock 1953; de Castro 1952; Ziegler 2010). Looking from the risk perspective (Centeno et al. 2015), the globalized food system will create, in the future, new threats of massive hunger due to uninspected breakdowns of trade, transport, social order, and high-impact plant or animal diseases. The distance between vulnerability and catastrophe is decreasing with the growth of interdependencies and the ongoing reduction in family farms worldwide (Erenstein et al. 2021), or at least the reduction in farm size in low-income countries (Lowder et al. 2016).

The debates related to hunger and food system transformation reflect the complexities of the task more and more. Science is not only seen as an objective observer, but is called upon to participate in public debates (Caron et al. 2021). However, science, apart from being considered embedded in society as a functioning system (Luhmann 1995), is not simply providing voices and forces or speaking with one voice. Politicians can pick out the research data and messages which are the most convenient to them. Nevertheless, the political arena remains the most relevant one in addressing the hunger problem, as issues of inequality of rights and income, poverty, conflicts and wars, climate change, and the often-inefficient food supply chains remain the critical drivers of hunger and are under the responsibility of politics dealing with public affairs and freedom. The latest Food Security and Nutrition report by the FAO et al. (2021) states, amongst other things, that:

- New projections confirm that hunger will not be eradicated by 2030 unless bold actions are taken to accelerate progress, especially actions to address inequality in access to food.
- Close to 12 percent of the global population was severely food insecure in 2020, representing 928 million people—148 million more than in 2019.
- The high cost of healthy diets coupled with persistent high levels of income inequality puts healthy diets out of reach for around 3 billion people, especially the poor, in every region of the world in 2019. This number is slightly less than in 2017 and will likely increase in most regions in 2020 due to the COVID-19 pandemic.
- Most children with malnutrition live in Africa and Asia. These regions account for more than nine out of ten of all children with stunting, more than nine out of ten children with wasting and more than seven out of ten children who are affected by overweight worldwide.
- Conflict, climate variability and extremes, and economic slowdowns and downturns (now exacerbated by the COVID-19 pandemic) are major drivers of food insecurity and malnutrition that continue to increase in both frequency and intensity, and are occurring more frequently in combination.
- Drivers that are external (e.g., conflicts or climate shocks) and internal (e.g., low productivity and inefficient food supply chains) to food systems are pushing up the cost of nutritious foods which, combined with low incomes, are increasing the unaffordability of healthy diets. (FAO et al. 2021).

Let us read these statements by the FAO through the lens focused on local social capital. We have a more concrete view of why more weight should be put on the local level and to better understand why humanity is not progressing on this question of ending hunger, but rather has been turning in circles for over 40 years at least. We will take a closer look at the critical keywords “bold actions”, “inequality in access to food”, “the poor”, “economic slowdowns and downturns”, “low productivity”, and finally, “inefficient food supplies”. In the following chapters, we will try to focus not only on relating these factors in a systemic way to social capital, but also to substantiate them with experiences made in concrete territories, communities, and local food systems in various regions of Africa over the last 15 years since the 2007/08 food crises (Sommerville et al. 2014).

My 40 years of experience in the field of food and agriculture and rural development worldwide taught me that the hunger issue in contemporary society is too complex to be dealt with meaningfully by science and as a knowledge issue alone, as it is a foremost practical and political reality, with its weakest links being the local level of social capital in poor countries. Solutions always require simultaneous action

and agency on all four levels, i.e., local, national, regional and global, in order to address the hunger problem in a systematic, inclusive and effective way. Knowledge has to be complemented by appropriate action and agency (as the capacity to act). To underestimate the complexity of the task by leaving out a factor such as social capital would lead to failure. Additionally, over-rating the complexity would be fatal. We must manage this paradox, that the hunger question is complex and simple. It is simple in the sense that we find the ways out when becoming concrete, knowing the local conditions, accepting power (or control) relations, and progressing step-by-step using our pragmatic and ethic-based attitudes in given social networks and through dialogue and openness, adding to the required social capital of the given local or national food system. Human thinking is a proven way to manage paradoxes, difficulties, and crises. From Aristoteles to Ernst Bloch (Zimmermann 2016), we have plenty of wisdom, methods, and principles at our disposal. Ernst Bloch's famous Principle of Hope books should always remind scientists and practitioners to make the best use of thinking, arguing, debating, and acting as a continuous flow. This, briefly, means that we have to better understand the concept and reality behind "social capital". However, first, let us look at hunger's generally agreed upon or at least mentioned structural drivers.

2. Generally Mentioned Structural Drivers of Hunger

Hunger is, fortunately, the exception to the rule in contemporary times, thanks to outstanding achievements in agriculture, agronomy, technology, and in building fine-tuned institutional systems over the "civilized" planet, linking all or most countries and regions and providing food assistance in case of large emergencies. However, the exception has still touched, over the last 20 to 50 years, about 10% of humans. A scientific consensus is that meeting the food demand by 2050 by applying sustainable food production would be one of humanity's most significant challenges (Cassman and Grassini 2020). It is therefore vital to understand the commonly agreed upon critical drivers of hunger, capable of interrupting the target of solving the hunger problem in the coming 30 years, assuming that no major technological breakthrough nor change on the demand side will happen during this time. We will briefly present poverty, wars and pandemics, climate extremes, gender, age and race, societal divisions, and capitalist economies as commonly mentioned drivers. This list is of course not complete. However, I intend to open the view of the large specter of hunger, a phenomenon that involves many aspects of society, history, and natural phenomena of our planet.

2.1. Poverty

Poverty is the most significant risk factor for hunger in all cases, whether the affected people are producers or consumers (Cooper et al. 2021). Poverty often means not having a voice and not always being represented in important events. The former FAO DG stated that very clearly:

What makes hunger a very complex political problem is that the hungry are not represented. I never saw a union association that represents the malnourished . . . Most people who face hunger nowadays are not in this situation due to a lack of food produced but because they don't have money to buy it. So, give them money or the resources to gain access to food. It is a simple formula. The best would be to increase employment and the minimum wage paid to a level that could allow workers access to a healthy diet. And for those who can't be employed for different reasons, provide them a minimum subsidy through cash transfer programs, as we did in Brazil's Zero Hunger program. It is that simple: there is no miracle! (Jose Graziano da Silva, IPS Interview 23 September 2021 (Wise 2021))

The poor consumers and the working class in rich countries are in a different position compared to food-insecure people and households in poor or low-income countries; they can, in most cases, count on food stamps, programs, and various institutions amid plenty.

2.2. Wars and Pandemics

Wars, including civil wars, are ideal for interrupting food production and increasing the probability of hunger. In 2020, almost all low- and middle-income countries were affected by pandemic-induced economic downturns. The number of undernourished people was more than five times greater than the highest increase in undernourishment in the last two decades. When other drivers also affected those countries, particularly climate-related disasters, conflict, or a combination, the most significant increase in undernourishment was seen in Africa, followed by Asia (FAO et al. 2021).

2.3. Climate Variability and Extremes

Climate variability and extremes affect land degradation, yields, animal health, and food security (IPCC 2020). However, they simultaneously affect communities and institutions and hence the food systems. Areas receiving less rain, less appropriate rain patterns, and higher temperatures may reduce their cropping and

herding areas and will be affected with less production and decreased food security. Dependency on food aid thus increases. The WFP (2021) states:

Even before the COVID-19 pandemic, the world was not on track to end hunger and all forms of malnutrition by 2030. In 2020, hunger and malnutrition shot up in absolute and proportional terms, largely perpetuated by the socio-economic effects of COVID-19. However, unlike COVID-19, there is no vaccine to protect vulnerable communities worldwide from the worsening climate crisis. By 2050, the risk of hunger and malnutrition could rise by 20 percent if the global community fails to act now to mitigate and prevent the adverse effects of climate change. (WFP 2021, p. 1)

We will not go into further detail here, assuming that this issue is well-known or broadly accepted by most readers.

2.4. Gender, Age, and Race

A recent report summarizes the situation for women involved in food systems as follows:

After 12 years, global food security governance is highly fragmented, with the power of a small number of actors increasing dramatically. Those actors include major multinational corporations, the World Bank and the IMF and the G7 governments. The voices of the people who have been left food-insecure are seldom heard in policy discussions. Funding targeted at women in agriculture is insignificant compared with other official funding, and this public disinvestment opens the door to other actors, such as multinational companies, which have taken a “business as usual” approach and make gender equality in agriculture a low priority at best. Especially in light of climate change and increased conflicts, failing to address the structural causes of the food price crisis has put women even more at risk on all dimensions of food security. (Botreau and Cohen 2020, p. 104)

It is globally recognized that achieving gender equality and empowering women is an absolute precondition to breaking the cycle of poverty and hunger and achieving the 17 Sustainable Development Goals (FAO 2021a). The FAO advises ensuring that gender equality issues are included in all spheres and that there is monitoring and reporting progress at the country level.

Does race matter? In 1964, Boyd Orr¹ and Lubbock wrote in “The White man’s Dilemma” in codified style about the prevailing importance of racist prejudices:

However, if all the people in the world had had environmental conditions which would enable them to attain their full inherited capacity for physical and mental ability, there would be little, if any, the difference between the ability of men of different races. (Op. cit, p. 73)

2.5. Societal Contradictions and Divisions and Poor Education

The Agenda 21 organized by UNCED in 1992 already tried to effectively address poverty and hunger with a global and non-binding international initiative. This ambitious program was soon attacked by an anti-Agenda 21 movement and was replaced 24 years later by the more ambitious SDGs. The governments failed in most cases to implement their commitments (DESA 2012). Bureaucracies and loss of national sovereignty were common reasons for collectively attacking and boycotting international plans to address poverty and hunger. The contradictions of the capitalist development divide the most relevant actors of society, from the poor farmers and laborers to the shareholders of multinational companies. A lack of debates and poor education contribute to undermining institutions and rules such as ignoring international biodiversity and climate change protocols, particularly those on food (Fakhri 2021). Other consequences of such societal divides and poor education are fast-growing meat consumption and cereals produced for agro-fuel, both increasing hunger conditions for the poor.

2.6. Capitalist Economies Including Land Acquisitions by Non-Farmers

The literature on the risks related to globalized food systems is still growing, but already reveals important general features (Holt-Giménez and Altieri 2012). More specific criticism is related to local biophysical and social sub-systems (de Raymond et al. 2021) and their complexities (Liu et al. 2007). Financial markets, operating in an unregulated space with futures and other instruments, and the often-missing relation between local and subnational markets (e.g., grain in the Sahel) from international prices are topics emerging in the research of risks related to food systems. Clashes between global investors and local communities are happening and programmed, when divergent interests (shareholder profit/private investments replacing sound

¹ He was the first DG of the FAO (1945–1948) and winner of the Nobel Peace prize for his research on nutrition in 1949.

national policies of rural development vs. community-driven and food sovereignty) collide (McMichael 2012), fail to communicate (Luhmann 1995) and increase the vulnerability of food-insecure countries (de Raymond et al. 2021). Smallholders, the laborers, rural communities in low- and mid-income countries (LMIC) on one side, and the poor consumers depending on cheap (but unhealthy) food leading to obesity and health problems on the other side, pay the price. Risks related to system breakdowns are increasing, as previously resilient and rather autonomous food networks at the local level have rapidly disappeared worldwide. Often discussed under the names of “rural exodus” or “migration”, but well-explained with the concepts of exploitation and suppression, this phenomenon is highly related with the concept of local social capital—or alternatively related to the more general concept of a social sub-system. For Luhmann (1997), exploitation, suppression and any other moral reasons do not explain the destiny of the poor and the hungry today, as they are “just outdated mythologies”. The question is rather one of inclusion or exclusion into the world’s society and its highly differentiated and complex functional systems (such as economy, law, media, politics).

3. Social Capital as an Underestimated Parameter for Reducing Hunger

We may consider social capital featuring social organization such as networks, norms, and social trust, that facilitate coordination and cooperation for mutual benefit (Putnam 1995, p. 67). Social capital is rarely used as a factor or parameter in explaining food insecurity and hunger.

The notion of capital emerged in economics with Adam Smith and evolved over time by differentiating into natural, financial, human, social and institutional capital (Piazza-Georgi 2002). In the 1960sm it was also commonly agreed within agricultural economics, that human capital—however, not yet the related social capital—is a prerequisite for economic growth, particularly in low-income countries (Melton 1965). Since then, independently from economics, sociology took up the concepts of human and social capital (Portes 1998), but corrected the focus from the mainly individual human capital concept towards social structures (such as networks) and inter-personal agency, emphasizing the social dimension. What is social capital from the sociology perspective? The answer depends on the applied concepts, theories and narratives. I use the tradition and knowledge emanating mainly from contemporary sociology, particularly based on Pierce, Weber, Elias, Luhmann, Bourdieu, and notably, Harrison White (2008). They all try to understand issues of social organization and chaos, identities and actors, power and control,

institutions and styles², mores and ideas/ideologies, culture and history, from the local or micro level up to a global society level. Most of the sociologists mentioned are adhering somehow to a relational perspective, which emphasizes networks with processes such as interactions, social ties, cooperation and conversations as the central material of the social. In the last 60 years, a huge collection of literature in both economics and sociology has emerged, providing evidence on the critical impact of social capital—or the quality of the population as it is also called by Schultz (1981)—on poverty alleviation and addressing hunger in LMIC.

If we refer to the famous definition of social capital provided by Bourdieu (1980, 1986), which according to some scholars (Julien 2014; Portes 1998) is still one of the most appropriate and precise descriptions of this concept emanating from sociology, then we can define it, as follows, as a working concept:

Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to membership in a group. Each group or community has a certain amount of social wealth in various forms- participation and bonds to larger public goods through social relations in networks; access to information and knowledge; trust amongst its members; inclusiveness-, which can be used to different degrees by its members and so further accumulate or consume its resources. (slightly modified by the author from Bourdieu 1986)

This concept has therefore a double importance in the hunger debate. For the individual actor, this “aggregate of resources” or networks (of social relationships) constitute a determining point of the departure for agency, which yields reproductive benefits such as access to new connections and networks, markets, information, and credit through gained confidence, influence, status and trust (Nicolay 2017). The individual farmer receives agency in order to better organize in collective action, take up opportunities and invest (Schultz 1981) and build social structures or institutions in solving his or her problems (Nicolay 2016). From the collective (or social) side, and here comes the second importance of social capital, it provides a pool of relations which helps in maintaining and reproducing its agency as a collective or corporate agent or identity. Social capital understood as a complex of networks intermingled with self-reproducing context and providing nested structures (such as

² In the sense of White (2008), i.e., the rhythm of life, whereas identities are like melodies.

communities) within a social system reduces its vulnerability against “attacks” of control by competing collective or individual agents (White 2008). Examples of social capital phenomena are: (a) A local group of smallholders that increases its chances to fight against intentions of foreign corporate organizations to take control of their land use by new formats of internal organization, or; (b) Organic cotton unions who defend their price interests and selling conditions within the national cotton network often dominated by traditional and corporate interests (Nicolay 2019). Social capital is therefore always embedded and intermingled with social networks (or social systems). It enhances the probability of creating effective forms of organizations, such as committees or innovation platforms, which are instrumental in both innovation adaptation and collective local problem solving (Nicolay 2016).

The Negligence of (Local) Social Capital as a Parameter of Hunger

The specification “local” shall mean that I focus the discussion of the social capital on territorial or geographic levels, where food and fiber are produced through labor. Neglecting local social capital can have fatal consequences for society (Helbing 2013), including its food systems. We have seen that social components matter in the food and hunger nexus, but that both science and practice struggle to make them visible and understand the reality of social relations. Social order/chaos are undervalued, and the importance of atomistic/individual actors overstated. This may be primarily explained by the lack of philosophical and sociological thinking³ and the dominance of “common sense” or non-reflective language. Examples of social capital having a key role in succeeding in sustainable intensification (as an important element of food system in LMIC) and improved economic performance are extension systems, agencies linking farmers to markets and external agencies, innovation platforms (Adekunle and Fatunbi 2012), farmer field schools, cooperatives (Biresaw 2019; Muriqi et al. 2021) and business groups (Pretty et al. 2011). However, what if such projects building on enhancing social capital (or social infrastructure according to Pretty) remain exceptions and are not taken up by policy measures at national level?

³ Luhmann remarked: People see humans, science (sociology) sees systems”.

4. A Critique of Agroecology and Its Ideological Fight against Agribusiness

The concept and approach of agroecology has gained a strong momentum and even support from the FAO since the last food crises in 2009 as a way to contribute to food security. The main features according to the FAO (2021b) are:

- Agroecology is a holistic and integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of sustainable agriculture and food systems. It seeks to optimize the interactions between plants, animals, humans and the environment while also addressing the need for socially equitable food systems within which people can exercise choice over what they eat and how and where it is produced.
- It now represents a transdisciplinary field that includes food systems' ecological, socio-cultural, technological, economic and political dimensions, from production to consumption.
- It is no longer possible to look at food, livelihoods, health and the management of natural resources separately. Embracing systems thinking through holistic approaches is needed to address these complex and interdependent challenges. The fundamental connection between people and the planet, with sustainable agriculture and food systems, is at the heart of the 2030 Agenda for Sustainable Development, which stresses the urgent need to take concerted action and pursue policies directed at transformational change.
- Ending poverty, achieving zero hunger while ensuring inclusive growth, and sustainably managing the planet's natural resources, all in the context of climate change and biodiversity loss, will only be possible through holistic and integrated approaches that respect human rights.
- Agroecology is based on bottom-up and territorial processes, helping to deliver contextualized solutions to local problems with people at the center. There is no single way to apply agroecological approaches—it depends on local contexts, constraints and opportunities but there are common principles that have been articulated in the framework of the 10 Elements⁴ of Agroecology.

Agroecology is therefore mainly determined by territorial, local and human-nature-related networks and links, including the concept of social capital at various levels such as the household, village/neighborhood and local markets):

⁴ The ten elements of agroecology are: diversity, co-creation and sharing of knowledge, synergies, efficiency, recycling, resilience, human and social values, culture and food tradition, responsible governance and circular and solidarity economy (see Figure 1)

Agroecology places a strong emphasis on human and social values, such as dignity, equity, inclusion and justice all contributing to the improved livelihoods dimension of the SDGs. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems. By building autonomy and adaptive capacities to manage their agro-ecosystems, agroecological approaches empower people and communities to overcome poverty, hunger, and malnutrition, while promoting human rights, such as the right to food, and stewardship of the environment so that future generations can also live in prosperity (Human and social values). (FAO 2021b; Knowledge hub, p. 1)

Interestingly, the economic dimension is not emphasized, nor are ecology or the social dimension. Should large-scale farms and agribusiness not consider and apply agroecology principles as well? However, more severe is the rather moral claim (aspirations, needs) of the here abstract workers and farmers (emphasis on human and social values) instead of the real and concrete requirements in the form of people's needs and social capital.

The local networks at the farm and landscape levels are often poorly linked to the higher-level institutions dealing with governance and control, and in most cases, are even conflictual. The intended or proclaimed support for the transition to sustainable food and agricultural systems towards food security following agroecological concepts and practices is not happening (IPES-Food 2020). This structural feature—the critical relation between the two levels—often fails exactly due to precisely the social capital at the local level. By visualizing the position of the ten agroecology elements (see below) and differentiating on the axes of natural/social and local/high-level, the neglect of “social capital” (a part of the negligence of the economic dimension) in the current design of agroecology becomes apparent (see Figure 1).

Even if agroecology, compared with its counter concept of industrial agriculture, is relatively strongly emphasizing the social aspects within agriculture and food systems, the conceptualization of social capital and the real needs of the farmers and laborers remains weak.

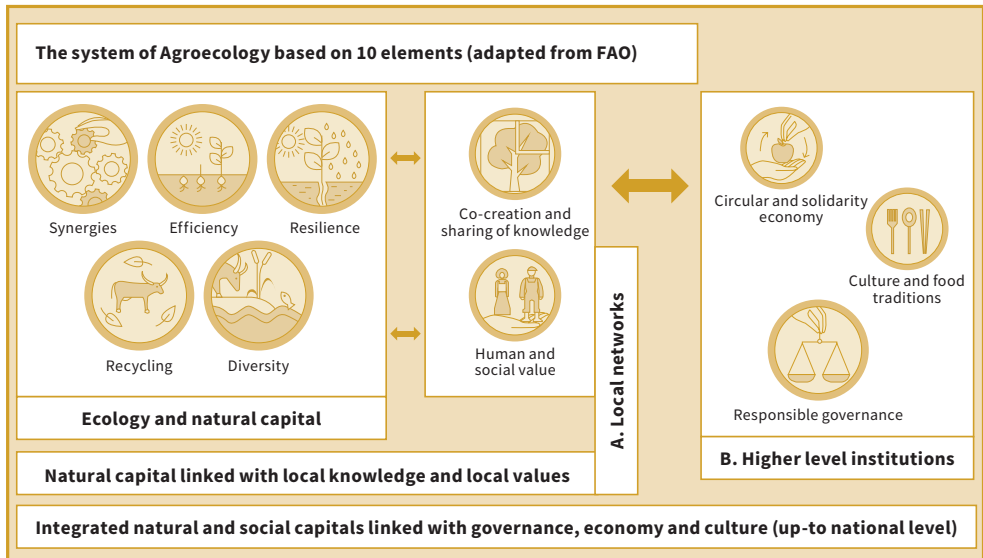


Figure 1. The positioning of social capital in the agroecology system as promoted by the FAO. Source: Figure adapted by the author.

Ideology Disputes between Agroecology Movements and Agribusiness

Power relations between producers (labor) and buyers (financial capital) at local to global levels require more attention again. This is about controlling the direction, benefits cashed in by individuals, groups and social classes, as well about the outcomes and impacts of food systems on nature, society and economics. The complex of intermingling networks of buyers–producers—networks constituting markets (White 2008)—forge the multiple food systems worldwide. Gliessman and Montenegro (2021) complain, for example, that the organizers of the UNFSS⁵ relegate agroecology to further promoting competing technologies such as genetic engineering, digital frameworks, and big data, undermining the interests of (family) farms in favor of corporate interests. However, researchers have tried to mediate here by stating, that “socio-economic researchers need to suggest inclusive ways to transform the more than 400 million smallholder farms worldwide. They must identify pathways out of inequitable and unfair arrangements over land, credit and labor, and empower the rights of women and youth” (von Braun et al. 2021).

⁵ UN Food Security Summit organized by UN in September 2021.

A concerned voice from research regarding the current role of the private sector and investors in the global food summit governance comes from Covic et al. (2021):

Further, the agenda and discussions at the UNFSS (UN Food Security Summit) need to be driven by LMICs and other voices that are often given a back seat, including citizens, consumers, and other civil society actors. While many experts have been called upon or have simply stepped up to organize and be present at the UNFSS, others may purposely stay away due to legitimacy concerns. For some constituencies, the involvement of trans-and multinational food businesses in the UNFSS is problematic, given their dominance over global and national food systems and a history of multiple instances of bad practice. On the other hand, driven by consumer demands and more sustainability-focused investors, there are significant changes in some parts of the private sector towards environmental sustainability. (p. 3)

From the institutional side, various UN rapporteurs have been struggling for over 15 years to have the “Rights to food” respected and to convince public and private actors to better respect this right in the plans and policies at national level. They lament that issues of power, participation, and basic rights to food remain unresolved. Interestingly, the rapporteurs clearly take a position for agroecology⁶ as a way to address the problems of food insecurity and hunger (Fakhri 2021) and consider it as an alternative to industrial agriculture. This is interesting, as I see no reason why industrial farming practices should not be forced to apply the principles, assuring a path towards ecology and social fairness for all operators. Another strong voice from the producers’ side is Via Campesina⁷. They have advocated for over 20 years for the concept of food sovereignty, implicitly emphasizing social capital and agency at national and local levels as critical requirements for abolishing hunger.

5. The Morphological Look to Overcome Ideological Barriers

Ideological disruptions and fights at the global to local level have of course important implications on networks in food systems, but they are inevitable. Can we mediate to a certain degree such ideological impasses? I propose here a way to apply the morphological analyses. Ritchey (1998) argues that the morphological analysis,

⁶ It is “often more productive than intensive industrial techniques” (Fakhri 2021, p. 7)

⁷ See its Manifesto for the future of the planet on <https://viacampesina.org/en/food-sovereignty-a-manifesto-for-the-future-of-our-planet-la-via-campesina/> (accessed on 16 October 2021).

as invented by Zwicky⁸ in around 1950, is an appropriate and ingenious method to deal with complex policy issues. I would add that it could also address blocked dialogues due to strong ideological differences, as we observe between two forms of commonly perceived food regimes: (i) agribusiness (or “industrial agriculture”), which overemphasizes the economic dimension, and (ii) the agroecology movement⁹, which considers itself a reaction to agribusiness. The method is based on building all possible combinations or figurations within a fictitious (but plausible) solution space:

An alternative to formal (mathematical) methods and causal modelling is a form of non-quantified modelling relying on judgmental processes and internal consistency, rather than causality. Causal modelling, when applicable, can- and should- be used as an aid to judgement. However, at a certain level of complexity (e.g., at the social, political and cognitive level), judgement must often be used, and worked with, more or less directly. The question is: How can judgmental processes be put on a sound scientific basis? Sets of non-quantified conditions can be synthesized into well-defined relationships or configurations representing solution spaces. In this context, there is no fundamental difference between quantified and non-quantified modelling. (Ritchey 1998, p. 2)

In Table 1, I try such a modelling with defined relationships of configurations representing a solution space. I propose ten parameters and allow three options for each (A, B, C), also representing “ideotypical” food regimes. By allowing three options, a new space appears against the dual perspective. The column “B” represents the new option. Agroecology cannot be the new option, as we see no solution outside the restricted (only smallholders, only local circles, only movements) agroecological production regime (see Figure 1) in order to be sustainable. Agroecology positions are mostly captured with option A (and partially B), whereby agribusiness (or industrial agriculture) is mainly covered under option C. Under B fall the middle options, such as middle-sized family-based agribusiness or well-off modern farms and households with sufficient labor and land capital. All main forms of food systems worldwide can be captured in this way and can subsequently be discussed. Critical solutions are marked in Table 1 with the dark background in grey.

⁸ Swiss astrophysicist and engineer.

⁹ However, international organisations such as the FAO and EU are also supporting agroecology, but not in the same way as various social movements.

Table 1. Morphological box for food and agriculture systems, based on 10 parameters providing 30 combinations (shaded combinations considered critical).

Parameter	Regime A	Regime B	Regime C
1 Production unit	Family farm (poor)	Family and/or cooperative farm (supported)	Corporate or state farm
2 Production method (bottom-line for A and B: agroecology*)	Local inputs dominating	Mixed	Monocultures (high-tech, capital-intensive)
3 Type of markets	Nested/local**	Mixed	Global
4 Social distance between producers and end-consumers	Small	Medium	Big
5 Price fixation	Producer–consumer agreements	Mixed	Downstream VC actors
6 Policy space	National	all levels	International
7 Justice/human rights- and community-based (of food system)	Yes	Partial	No
8 Role of lead scientific disciplines	Natural and economics	Natural, socio-economics, ethics	Private sector research (mostly natural and economics)
9 Value-addition location (mainly processing of food)	Local	Subnational and larger areas	Global (rich countries)
10 Multifunctionality of agriculture systems	Yes (>4 functions)	Partial (2–3 functions)	No (only economic functions)
Critical options (in grey fields)	2	0	5

Source: Table by author. *See definition by the FAO. **See a definition in Fakhri 2021 on “territorial markets” (p. 20).

The production unit is a key and first parameter to distinguish “agroecology as a movement” from “industrial agriculture”. In Table 1, “Agroecology as a movement”

is in the solution space 1AB and "Industrial agriculture" in 1BC, as industrial farming is also possible on non-capitalist-owned farms of middle size (1B). The solution space 1B (supported family farms) can be both agroecological and industrial. These two polarizing concepts are revealed here as concepts rather than realities¹⁰. In reality, it has to be seen case-by-case.

The morphological view further provides 7 critical constellations out of 30:

- The poor family farms (1A) have economic and often environmental deficiencies and are hardly socio-economically viable (often not attractive enough to young farmers to take over from their parents).
- The capital and high-tech production method (2C) fostering monoculture (on tropical soils) has either social or environmental deficiencies (or both).
- The dominance of price fixation by downstream value chain actors (5C) leads to the unjust distribution of created wealth and socio-economic disruptions.
- The lack of respect and institutionalization of human rights (7C) impedes the emergence of autopoietic local structures able to cope with context and required investments.
- Social and societal dimensions including social capital and politics are not sufficiently considered in option A, where the link between local food production and world consumption needs are neglected (8A).
- The lack of local and subnational value addition in favor of urban elites at the national level in the Global South and the rich countries (9C) prevents the emergence of required wealth accumulation in rural LMIC and ultimately perpetuates the conditions for "structural" hunger.
- Agriculture systems only designed and used as an economic function (10C) will run into conflicts with society and nature (see FAO et al. 2021).

We can maintain the two dominant regimes of food systems in the Global South (observation of literature and of public debates; see also the cited Gliessman, Covic and Fakhri): (i) the (small-scale) farmer-based and (ii) agribusiness-based systems dominated by the corporate and capitalist-motivated¹¹ networks. Agroecology is often attributed to the small-scale-based regime (see Figure 1 with the element of circular and solidary economy). However, from the agronomic side, there is no reason that large-scale corporate and state farms could not fulfil most of the agroecology

¹⁰ This is not surprising for practitioners and researchers working on organic agriculture, which can work on all three types of production units (A, B, C).

¹¹ Increasing numbers are urban-based families and groups involved in agribusiness, operating through employees and tenants. In Africa since the 1990s.

criteria. The morphological box (Table 1) informs us about five critical features emanating from agribusiness regimes and only two from the (poor, small-scale) farmer regime. Policies should therefore mainly concentrate on adjusting the five critical features of agribusiness and ensure that the agroecological principles are applied here. Secondly, we believe that policies should better address the destiny of poor farming households—or better prevent their farms from going bankrupt or just being given away. The policy should ensure their inclusion and further existence and role in the food system or in any other economic sector.

The bottom line for assessing food regimes is sustainability. We can now describe the solution space in tabular form as self-perceived by the two food regimes AEM (agroecology movement) or Option A, BUZ (agribusiness) or Option C, or finally of SDG or option B (Table 2). Both mainly discussed food regimes (A, B) show weak elements in the chain as compared to the ideal of the SDG (Sustainable Development Goals) and the Option B regime. The following pattern of farmer-based or mixed forms are considered sustainable options and compatible with SDG 1 (poverty) and 2 (hunger), thus providing a solution space.

Table 2. Solution space for three food regimes.

Regime Type	Regime Type or Case Description	Solution Pattern Based on the Ten Parameters	N _(critical)
AEM/ regime A (agroecology movement)	Farmer, ideal from within	1AB-2A-3AB- 4AB-5AB-6ABC- 7A-8B-9A-10A	2
BUZ/ regime C (agribusiness)	Agribusiness, ideal from within (corporate food regime)	1C-2C-3C- 4BC-5C-6A- 7C-8C-9C-10C	5
SDG/ regime B	Sustainable according to SDG	1BC-2B-3BC- 4AB-5B-6ABC- 7AB-8B-9ABC-10AB	0

Shaded/yellow combinations are considered critical from the outside/author observer's perspective (Perceptions depend on interests and background. Therefore, there is a need for debates to find agreements). Source: Table by author.

The conclusion from the morphological analyses and the solution space is simple:

- Agro-industry (or agro-business) and agroecology (or family farming), seen as either a movement or network, can be clearly differentiated. However, the

- respective concepts or ideal figurations behind them are not clearly separable and should be seen as the two poles between a continuum
- A more significant part of the concrete agribusiness-driven food systems is not (yet) based on agroecological principles, is not inclusive, reduces the chances for local social capital formation and does not contribute to poverty alleviation (no multi-functionality)
 - The farmer-based regime has its weakness in its large fraction of very resource-poor farms (or households) and efficiency problems (constraining investment options)
 - Price fixation agency and local value addition are two key features in which the two regimes A and C differentiate in the political–economic dimension. As agribusiness is in most cases also present downstream the value chain, they can fetch better profit than farms that rarely have negotiation power, i.e., only in specific markets and if well-organized (e.g., in federations of cooperatives) at the national level. These two features require social capital from the involved primary producers.

6. Ways and Tactics to Strengthen Local Social Networks in Food Systems

Innovation platforms, going beyond the scope of a single value chain, are institutions with the potential to increase local value addition and contribute to creating wealth and increasing food security. They provide ideal starting points to strengthen local capacities and networks and thus provide concrete and practical ways to create social capital. A practical application requires theoretical and practical skills, leadership, and proactive engagement of various stakeholders going beyond the involved value chains. In addition, it requires financial partners. Fostering agency, empowerment, and the growth of social capital as an impact target would increase the chances of strengthening the agency of farmer figurations. Innovation platforms can be organized by combining 1–3 value chains plus additional core themes such as soil fertility improvement and maintaining the social coherence within a given area (commune, district, etc.).

6.1. A Better Link between Local and National Actors and Programs

One example to show the need for a better connection between local and national scales is the very dynamic land market in SSA. Land prices have skyrocketed recently (Jayne et al. 2021). What will be the implications on food security, the accessibility of land for young farmers, and social equity and economic growth?

Another example is the need to better harness the current and coming opportunities to use weather forecast data to inform farmers and herders on time (Nakalembe et al. 2021). This is only possible if the links between national and local actors are assured.

A third example is a need for a balanced and efficient food supply-chain growth at the local level (Reardon et al. 2021), assuring a healthy supply of processed food ideally produced locally and in the country. For such systems to be built, a fine-tuning of activities and interactions between cooperatives, policymakers, local entrepreneurs, and food suppliers and processors is called for.

Farmer organizations must strengthen alliances with strategic partners and emancipate themselves from the narrow national corset.

I consider the following actor groups as crucial allies to boost social capital within food systems: technology providers and financial partners, the judiciary, social scientists, consumers, and the international community.

Technology providers and entrepreneurs are prime allies and are often in short supply, as the markets are not attractive enough and rarely promoted during the critical stages by the public sector (Mazzucato 2021). Financial partners and investors are part of the required ecology of partners and networks to promote social capital-based networks with viable but fair business plans.

The example I would like to present for the importance of financial partners and investors relates again to West Africa, particularly the organic cotton sector. I have been personally involved in its promotion since 1998 through the work of the Swiss NGO Helvetas, where we, as a group of practitioners, organic farming promoters, entrepreneurs, and scientists, created the West Africa Organic Cotton Coalition (CCBE) in 2017. The CCBE aims to address eight critical challenges for the 2.5 million cotton producers of West Africa with an innovative approach based on the concept of social capital: (1) low productivity of cotton production; (2) poverty and food insecurity of producers; (3) soil degradation and declining yields; (4) uncertainty about how programs are coping with climate change; (5) unemployment and low labor wages; (6) health problems due to pesticide application in the cotton fields; (7) global textile companies having difficulties in finding organic cotton lint in the world market, and; (8) social unrest (Nicolay 2019). It took us over three years to win a financial partner (GIZ) to set the coalition in motion and start reaching a tangible impact, covering four producing countries (Burkina Faso, Benin, Mali, and Senegal). This example shows that in complex systems such as those of cotton and textile, which are highly differentiated and globalized, social capital and networks require assistance from the financial side if they cannot wait to generate their financial capital.

6.2. Politics, the Legal Framework, and the Judiciary

Sustainable intensification often depends on public support to address market limitations such as low farm prices and to adhere to environmentally sound practices (Silva et al. 2021). One example from Mali exemplifies the importance of politics and the legal and judiciary framework when aiming to upscale successful local initiatives related to food security and climate change adaptation (Bautze et al. 2018). Upscaling often requires substantial financial and human resources and a proper institutional framework. In the case of Mali, evolving between 2012 and 2018, the more the difficulties in implementing projects grew, the more hierarchies of the state from regions to national or central levels were involved. One explanation for this is that the drivers' social capital was insufficient and unable to mobilize new influential members from the top level, based on the national figuration and networks controlling more considerable funds, influences, and decision-makers. The collaborative efforts stopped abruptly between the regional (Sikasso) and national levels. Nevertheless, the step from grassroots/commune to the regional level succeed within a few months, involving local administrative, legal, and judiciary actors.

6.3. Social Scientists Applying Holistic and Inclusive Concepts

We can define a holistic concept if it addresses a perceived societal problem such as poverty and hunger or soil fertility degradation and biodiversity loss in a given area in all three dimensions of the SDG. Social scientists are skilled in selecting and using the required tools and approaches and mobilizing and uniting the various specialists and stakeholders to design solutions and viable pathways. By including representatives from farmer communities and groups with generally weak (unheard) voices and low social capital, new constellations can be created between researchers, farmers, and local and national decision-makers. Such innovative processes can lead to further research findings, encouraged farmer networks, and stimulated local economies and communities. The state can bring in its agency by mobilizing resources and facilitating processes enhancing food security. Research findings such as a better knowledge of the dynamics of farm class behavior—moving towards professionalizing or resilience or instead towards decapitalizing and withdrawing from the sector—allow the local stakeholders to better target their advice and investments. Thanks to the recognition and better understanding of markets, social networks and social dynamics on the ground can emerge (Frossard et al. 2017; Nicolay et al. 2020). Hence, the critical social capital is built and can trigger the envisaged socio-economic and ecologic development.

6.4. Consumers, Citizens and the International Community

Consumers and citizens, mediated by honest media and political activists, are more relevant, as large amounts of food are distributed, processed and traded in globalized networks. Consumer choice can make huge differences in which value chains to consider and what to buy. Such options finally decide which producers or production units will benefit. Consumers' choices often depend on how they are informed (and educated) by the media. More solidarity is required between the working class (hoping for relatively low food prices) and the farmers (aiming for higher food prices). This alliance is highly complex and challenging, as it must go beyond national borders.

The International community constituted by the UN system, state interventions, civil society, and fairness-based responsible businesses, does not directly impact the local level. Nevertheless, its policies, measures, actions, and investments play a critical role in shaping the socio-ecological landscape at the local level. Depending on the context, there are six pathways to follow toward food systems' transformation: (1) integrating humanitarian, development, and peacebuilding policies in conflict-affected areas; (2) scaling up climate resilience across food systems; (3) strengthening the resilience of the most vulnerable to economic adversity; (4) intervening along the food supply chains to lower the cost of nutritious foods; (5) tackling poverty and structural inequalities, ensuring interventions are pro-poor and inclusive, and; (6) strengthening food environments and changing consumer behavior to promote dietary patterns with positive impacts on human health and the environment (FAO et al. 2021). These pathways must be dealt with through coherent progressive politics; if not, they fall apart and remain ineffective.

7. Conclusions

Structural hunger can be defeated. Taking note of all the factors, using our current knowledge, and fixing the aim with agency, hunger can be beaten within 20 to 30 years. However, systems approaches based on comprehensive philosophies and narratives are needed to build coherent portfolios of policies, investments, and legislation and enable win-win solutions while managing trade-offs. These include various approaches: territorial, ecosystems, indigenous peoples' food systems approaches, and interventions that systemically address protracted crisis conditions (FAO et al. 2021). Additionally, the conscious and professional use of social capital theories and practices are required to assure that the policies, investments, legislation, and approaches reach the people where the critical actions happen—at the local

level (village, neighborhood, commune, district). Innovation platforms have been presented as a possible starting point for creating social capital.

More policy support (Cooper et al. 2021), better links with health and nutrition (Welch and Graham 2000), and prolonged standing advice are also required. More diverse and bottom-up-based food security and governance approaches (Sommerville et al. 2014), and at the same time a reduction in the fragility of the trade-based global food system (Puma et al. 2015), should be discussed more intensely after the experiences with COVID-19. When improving social capital, the critical items mentioned by the FAO et al. (2021) can be addressed: bold actions, ecological crises, inequality in access to food, the needs of the poor, low productivity, inadequate food supplies, and finally, hunger.

The good news is that the pathway toward ending hunger is not different from the pathway towards achieving SDGs, including the creation of more inclusive societies (or, with Luhmann, to create an inclusive world society) or the pathway to mitigating the disastrous impacts of the climate chaos. These three enormous challenges—the fight against hunger and for inclusiveness, sustainability, and climate change—will probably occupy the public discourse in the next 10 to 20 years. Understanding that they have similar root causes enhances the chances of finding collective solutions at the world level.

This essay is the result of over 40 years of thought and work with rural communities, the UN system (FAO), INGO work in Africa, the private sector, the working class, and a research institution. Its messages and reflections may be heard or not. It is based on the tradition of philosophical thought aiming to make this world a better place for all humans by reducing hunger. It is all in our hands, hearts, and brains. Finally, as Ernst Bloch reminds us, in learning again together and in tolerance but determination, hope.

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