

01

RECLAIMING THE FUTURE OF FOOD: CHALLENGING THE DEMATERIALIZATION OF FOOD SYSTEMS

*Marcos Ezequiel Filardi
and Stefano Prato*



Marcos Ezequiel Filardi is a lawyer who specializes in human rights and food sovereignty. He lectures at the School of Nutrition of the University of Buenos Aires (UBA), where he holds the Chair on Food Sovereignty, which is an academic space that promotes public debate on food systems.

Stefano Prato is Managing Director at the Society for International Development (SID) and Editor of SID's quarterly Journal, *Development*. He is a member of the Editorial Board of the *Right to Food and Nutrition Watch*.

Society for International Development (SID) is an international network of individuals and organizations founded in 1957 to promote social justice and foster democratic participation in processes of development.

“These dynamics, namely processes of dematerialization, digitalization and financialization, are deeply changing the character of the corporate food system. The result of this includes the shifting of power to new actors who are often increasingly distant from food production. At the same time, they are altering the conception of the food market and food consumption habits within urban centers and beyond.”

ACKNOWLEDGMENTS |

Special thanks to Silvia Ribeiro (ETC Group), Adriana Contarini and Guillermo Hough (Chair on Food Sovereignty 9 de Julio and ConCiencia Agroecologica), Guillermo Torres (independent researcher) and Sofia Monsalve (FIAN International) for their support in drafting and reviewing this article.

In 1966, Harry Harrison published a book entitled “Make Room! Make Room!”, in which he imagined a city of the future where water was drastically rationed, and a single corporation distributed the only edible product called ‘Soylent’, an industrial produced cookie composed of soy and lentils, whilst only the opulent minority could afford the luxury of meat and vegetables. The publication contained the following dedication: “For your sake, my children, I hope this turns out to be just a work of fiction.”¹

¹ Harrison, Harry. *Make Room, Make Room!* New York: Doubleday Editions, 1966. The book inspired the script of the movie *Soylent Green*, United States, 1973.

How far are we from Harry Harrison’s fiction today? This year’s *Watch* explores the impact that some of the dominant versions of modernity’s key dynamics have on food systems. These dynamics, namely processes of dematerialization, digitalization and financialization, are deeply changing the character of the corporate food system. The result of this includes the shifting of power to new actors who are often increasingly distant from food production. At the same time, they are altering the conception of the food market and food consumption habits within urban centers and beyond. From the perspective of peasants and their communities, it is essential to understand these dynamics and analyze how they might be shifting the targets of political action in the pursuit of food sovereignty and the fulfillment of the human right to adequate food and nutrition.

Over the past decades, the combined effect of liberalization, deregulation and privatization has seen the range of tradable goods and services expanding and extending into domains that have previously been considered inherently public, such as

water, education and health, among others. This transformation of public goods, the cornerstone of human rights, into tradable commodities is referred to as “commoditization” or “commodification”. Not only has the private provision of public goods under the neo-liberal doctrine of global economic institutions increasingly become the norm, but also, such provision has increasingly been de-regulated to the point of fundamentally altering the nature of the goods being provided. While it is largely accepted that food is a tradable good (food has been traded as a commodity for centuries), it is the failure in regulating markets, under the impulse of free market orthodoxies, that promotes the full commodification of food and contributes to the strategies of dispossession of productive resources that have heavily affected peasant communities. Such a weak market regulatory framework has generated a huge gap between what is legal and what is sustainable, coherent with human rights, and morally acceptable.

Under these same drivers, neoliberalism has generated an unprecedented concentration of wealth. Since 2015, the richest 1% of the world population has more wealth than the rest of the people on the planet; eight men possess the same wealth as 3,600 million people (half of humanity). Over the next 20 years, 500 people will bequeath US \$ 2.1 trillion to their heirs, a sum that exceeds India’s GDP, a country with a population of 1.3 billion people. The income of the poorest 10% of the world population has increased less than US \$3 per year between 1988 and 2011, while those of the richest 1% have increased 182 times more.² As a result, we are witnessing an almost total control of the industrial food system by fewer and fewer people and corporations,³ as also elucidated by Trudi Zundel and Silvia Ribeiro in their article on the process of mega-mergers in agricultural inputs and machinery.⁴ At the same time, the Peasant Food Web provides, to this day, 70% of our food using only 25% of our common goods.⁵

DEMATERIALIZATION, DIGITALIZATION AND FINANCIALIZATION: INTERTWINED YET DIFFERENT CONCEPTS

Three intertwined dynamics – dematerialization, digitalization and financialization – are profoundly changing the nature of both tradable goods and the markets where these are exchanged. While each of these dynamics may be subject to different characterizations, the objective of the *Watch* is to frame popular definitions that can support policy engagement and political action by rights-holders and their social organizations. While these dynamics apply to all of the different dimensions that make up the food systems (including genetic resources, land, etc.), we have chosen to use the generic term of food to exemplify their significance.

By **dematerialization of food** we refer to a process that promotes the decrease of the physical substance of food and the increase of the market value of its immaterial dimensions. This happens at two levels. The first one relates to the value share of physical substance within the composition of food price. Traditionally, this was influenced by the significant farm-to-retail price spreads, meaning the difference between retail prices and producer prices of a given food product, generated by the material and immaterial costs that contribute to defining the price of food (including transport, logistics and distribution costs). Increasingly the share of immaterial dimensions is becoming larger than the actual value of food, from the cost of advertising, financial remunerations to investors, skyrocketing profits of large distribution channels and sophisticated attempts to use food purchases to gather information on consumers. The second dimension of dematerialization is related to fashion and taste, where aggressive marketing and new fashionable eating habits

² Oxfam. *An Economy for the 99%*. 2017. P. 2. Available at: www.oxfam.org/economy-99.

³ For more information, please see: International Panel of Experts on Sustainable Food Systems (Ipes Food). *Too big to feed: Exploring the impacts of mega-mergers, concentration, concentration of power in the agri-food sector*. 2017. Available at: www.ipes-food.org/Concentration; Heinrich Böll Foundation, Rosa Luxemburg Foundation, Friends of the Earth Europe. *Agrifood Atlas, Facts and figures about the corporations that control what we eat 2017*. October 2017. Available at: www.boell.de/en/agrifood-atlas.

⁴ *Ibid.* For more information on the process of mega-mergers in agricultural inputs and machinery, please see “Let Them Eat Data” in this edition of the *Right to Food and Nutrition Watch*.

⁵ ETC. *Who will feed us? The Peasant Food Web vs. The Industrial Food Chain*. 2017. Available at: www.etcgroup.org/whowillfeedus.

are generating an immaterial notion of food that is often unrelated to its physical qualities. This means that we can buy egg-like-products that do not actually contain eggs. Some of these trends are sometimes promoted by ill-framed health concerns, whereby the focus, even assuming the health concern is legitimate, is placed on retaining the consumption of an artificially reproduced taste rather than promoting healthy and sustainable diets. Some might argue that food always included immaterial dimensions, such as identities, cultures and traditions as well as, more broadly the joy of consuming a delicious meal. The difference here is the emerging shift from these socio-cultural, and somehow public, immaterial dimensions of food to market-valued, and therefore inherently private and tradable value-chain components (information on consumer choices, advertising, financial remunerations to brokers and retailers). The paradox of all this is to have food in the markets whose acceptability and price are fundamentally de-linked from physical production, and where taste mimics something that in fact might not even be there.

By **digitalization of food** we refer to an increasingly automated, delocalized and informatized process of production and commercialization of food. This starts at the level of agricultural inputs, with the ongoing efforts to advance bioinformatics infrastructures that are transforming seeds and other plant genetic material into digitalized sets of information. Paradoxically, while this process might have been initiated by scientists genuinely concerned with safeguarding biodiversity by creating virtual genetic material, which might be transplanted to future territories, it has now been captured by ruthless global corporations aiming to patent nature and acquire control of the production process by controlling the market of agricultural inputs. This means that plant and breed varieties are now circulating around the globe in the form of (patented) genetic data while the physical exchange of real seeds by farmers is made illegal in some countries. At production level, advancements in automation and robotics, drone technologies and remote controlling, have all rendered possible the extreme de-localization of automated agricultural activities, for example through remote-controlled robotic solutions to greenhouse automations. Lastly, e-commerce and service-related apps for mobile devices are reshaping the retail and food service industry by allowing ‘customers’ to place online orders with physical groceries, online retailers and restaurants for home delivery. New applications are beginning to flourish that enable customers to scan the barcode of the product that they wish to reorder, to place orders through microphones embedded in their mobile phones, or the ability to simply click the button on small devices associated with specific food products. In some cases manufacturers have also embedded purchasing apps and buttons into the hardware of kitchen appliances so that products can seamlessly be delivered to their doors. The concept of the marketplace as a physical location where people gather for the sale and purchase of goods, with all its colors, traditions, forms of knowledge, negotiations and transactions, is increasingly viewed by today’s homogenizing modernity as reminiscent of an archaic past. As one example, in this edition of the *Watch*, the article by Shalmali Guttal explores the challenge posed by Amazon in reshaping India’s food retail.⁶

⁶ For more information on this challenge, please see “The Changing Face of Food Retail in India” in this edition of the *Right to Food and Nutrition Watch*.

By **financialization of food** we refer to the increasing role played by financial markets within food systems. This plays out at two main levels. The first is the significant growth in the sale and purchase of financial products linked to food commodities, with the consequence of agricultural commodity futures markets replacing real economy determinants as the main drivers of food prices and their volatility. The second one is related to the transformation of agricultural resources. This is mostly related to land, but evermore so to information on genetic data, as well as on

patents over genetic resources, and infrastructures, which can be turned into financial assets for the purpose of acquisitions and re-sales in financial centers. These transactions are often completely delocalized from their physical locations and are completely independent of their actual use. Indeed, the financialization process of land facilitates land grabbing by (foreign) investors in manners that are often completely independent from agricultural production, as seen in the case study on MATOPIBA, Brazil, in this edition of the *Watch*.⁷ These intertwined dynamics have shifted decision-making power away from physical production systems in favor of often-unknown financial actors that are primarily interested in upstream operations rather than actual agricultural activities. As a result, global financial actors investing in land seek to speculate and maximize their financial gains, as opposed to peasants seeking to maintain their control over land to grow food, sustain their livelihoods and protect their cultural heritage. Financialization, therefore, has promoted grabbing of resources, production up-scaling, increasing delocalization of production from distribution and marketing, and the growth of intermediaries as the key point of aggregation in the food chain. Not only has this increased the distance between producers and consumers and facilitated the dispossession of land and other resources by their legitimate communities, but it has also undermined, if not emptied, local and national public spaces from effective decision-making power. These vicious processes have been largely facilitated by market liberalization measures promoted by global financial institutions in collusion with dominant local elites, promoting the emergence of normative hierarchies between commercially-framed rights, including investors' rights, and human rights. A perfect example can be seen in the numerous investor-state dispute settlement (ISDS) mechanisms embedded into bilateral and plurilateral trade agreements that *de-facto* limit states' capacity to regulate in the public interest and comply with their duty-bearer obligations to respect, protect and fulfill human rights.

While these definitions aim to bring some clarity in distinguishing between dematerialization, digitalization and financialization, it must be noted that the boundaries between these processes are often blurred and they should rather be regarded as different facets of the same macro phenomenon, which some have actually termed 'dematerialization' in the broader sense. Indeed, social movements have often used such broader meaning of dematerialization to qualify some of their struggles, as in the case of the fights against the dematerialization of land, seeds and genetic resources. This may also have been facilitated by the reality that some resources, such as land or seeds, could be impacted by all three of these dynamics. However, it remains important to draw some differences between these three processes in order to increase our analytical capacity and be able to better target normative interventions. At the same time, it must be noted that these dynamics are closely intertwined: in this year's *Watch*, Philip Seufert, Maria Luisa Mendonça and Fabio Pitta elaborate on the role digitalization has played in transforming land into a financial asset, while Trudi Zundel and Silvia Ribeiro describe how agricultural inputs, machinery and data are being merged into one another.

BEYOND DIGITALIZATION: THE FOURTH INDUSTRIAL REVOLUTION

In January of this year, the same actors that until now have promoted, financed and benefited from what they called the 'Green Revolution' (the multinational companies grouped in the World Economic Forum (WEF) and the Rockefeller Foundation, among others) published a report where they recognize the failure of the agro-industrial system that they shaped by force of their growing power.⁸

⁷ For more information on this case study on financialization and land grabbing, please see "When Land Becomes a Global Financial Asset: The MATOPIBA Case in Brazil" in this edition of the *Right to Food and Nutrition Watch*.

⁸ World Economic Forum. *Innovation with a Purpose: The role of technology innovation in accelerating food systems Transformation*. 2018. Available at: www.weforum.org/Innovation_with_a_Purpose.

⁹ For more information on this process, please see article "Let Them Eat Data" in this edition of the *Right to Food and Nutrition Watch*.

10 For more information, please visit: [protix.eu/](https://www.ipiff.org/); <https://www.ipiff.org/>; <http://www.buhlergroup.com/insect-technology-solutions> y www.impossiblefoods.com/.

11 For more information, please visit: www.impactvi.com/.

12 For more information, please visit: habit.com. For more information on the implications of 'personalization' for society, please see "Digitalized Nutrition or Personalized Malnutrition?" in this edition of the Right to Food and Nutrition Watch.

13 For more information, please visit: rmlagtech.com/.

14 For more information, please visit: ewn.co.za/Topic/Mobbissurance.

15 For more information, please visit: www.verigo.io/.

16 For more information, please visit: www.forbes.com/ibm-walmart-launching-blockchain-food-safety-alliance-in-china.

17 For more information, please see: www.farmersedge.ca.

18 For more information on big data, please see "Let Them Eat Data" in this edition of the *Right to Food and Nutrition Watch*.

19 For more information, please visit: cariboubio.com.

20 For more information, please visit: www.indigoag.com.

21 For more information, please visit: www.agbitech.com.

22 For more information, please visit: www.ecozensolutions.com.

23 Ribeiro, Silvia. "Monsanto, Dupont, CRISPR ¿qué puede salir mal?" *La Jornada*, October 1, 2016. Available in Spanish at: www.jornada.unam.mx.

24 Ribeiro, Silvia. "Armas Transgénicas para extinguir especies". *La Jornada*, September 3, 2016. Available in Spanish at: www.jornada.unam.mx.

25 Ribeiro, Silvia. "Reacción Mutagénica en Cadena". *La Jornada*, June 11, 2016. Available at: www.jornada.unam.mx; Ribeiro, Silvia. "Ejército de Estados Unidos, Gates y Monsanto detrás de transgénicos para extinguir especies". *La Jornada*, December 9, 2017. Available at: www.jornada.unam.mx.

26 El País. "Si está en la cocina es una mujer: cómo los algoritmos refuerzan los prejuicios". *El país*, September 22, 2017. Available in Spanish at: capitanswing.com.

This would certainly be news to celebrate – if only it came with the fair recognition of the struggle of social movements and peasants who denounce and resist the devastating consequences in their territories. Unfortunately, the very same actors who produce such reports claim to have their own recipe to find the way out of the food system crisis: the "Fourth Industrial Revolution (4IR), characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres."⁹ Trudi Zundel and Silvia Ribeiro describe what 4IR looks like in the case of precision agriculture and explore its implications for peasants. The new package promises to transform food systems with the following "12 transforming technologies":

- alternative proteins;¹⁰
- sensors with infrared spectrometers and hyperspectral images to analyze the "safety, quality and traceability of food"¹¹;
- nutrigenetics for personalized nutrition¹²;
- distribution of services to peasants through mobile phones;¹³
- big data and advanced analytics for insurances;¹⁴
- Internet of things for transparency and real-time traceability of the food chain;¹⁵
- traceability through Blockchain;¹⁶
- precision agriculture to "optimize the use of agricultural inputs and water",¹⁷ based on big data;¹⁸
- genetic editing¹⁹;
- microbiome technologies to increase crop resilience;²⁰
- biological products for the protection of crops and soil enrichment;²¹
- and renewable energies.²²

We could also add other developments in progress, such as CRISPR technology,²³ Genetic Biocontrol on Invasive Rodents (GBIRD),²⁴ genetic drivers,²⁵ algorithms overloaded with racial, sexist and colonial prejudices,²⁶ synthetic biology, nanotechnology and 3D food printing, among others, to challenge the most imaginative work of fiction.

If the Green Revolution found its legitimizing mantra in the need to increase production to 'feed the world', the Fourth Industrial Revolution, conscious of the failure of the previous one, now uses as a hook the need to build 'inclusive and sustainable food systems based on new technologies', presenting a new narrative with some new key actors and, therefore, posing new challenges.

WHAT ARE THE IMPACTS ON THE RIGHT TO FOOD AND NUTRITION AND THE STRUGGLE FOR FOOD SOVEREIGNTY?

Definitions aside, the combined effect of these dynamics – dematerialization, digitalization and financialization – is extremely concerning from the point of view of all those struggling to reaffirm the human right to adequate food and nutrition, in the context of the indivisibility of all human rights, as the cornerstone of the paradigm shift that should place agroecology at the core of our societies and our food systems. Not only do these processes contribute to the dispossession of peasants' knowledge and access to resources, by widening the gap between producers and consumers, they also facilitate the concentration of economic and political power into the hands of new set of remote actors that master information and financial means. This reframes class struggles, veering away from the traditional tension between labor and the ownership of physical capital, because the new masters of extreme inequalities do not engage in the real economy but rather in the immate-

rial realm of finance and information. As several commentators pointed out: “The world’s largest taxi firm, Uber, owns no cars. The world’s most popular media company, Facebook, creates no content. The world’s most valuable retailer, Alibaba, carries no stock. And the world’s largest accommodation provider, Airbnb, owns no property”.²⁷

²⁷ For more information, please see: McRae, Hamish. “Facebook, Airbnb, Uber and the Unstoppable Rise of the Content Non-Generators”. *Independent*, May 5, 2015. Available at: www.independent.co.uk.

Operating within the immaterial world, these actors tend to escape the boundaries of the physical and territorial notion of the Nation State and completely by-pass democratic accountability. More than this, such concentration of economic power fuels complex and far-reaching political economies that are increasingly capturing the ethical, normative and fiscal domains of the State and eroding the nature and scope of public policy spaces, particularly those where the State as duty-bearer engages with legitimate rights-holders. Of course, there are virtuous attempts to use new digital technologies for good causes that can advance peoples’ struggles. In this respect, in their article in this year’s *Watch*, Alvarez and Romero mention the example of EHNE Bizkaia, a member of La Vía Campesina, which developed a Smartphone application that elucidates, through a series of indicators, the repercussions of different food purchases on the environment. Seufert, Mendonça and Pitta report on how rural communities and their organizations in different parts of the world have been using tools like digital satellite images to defend their territories and better monitor the impacts of the operations of land grabbers, for instance with regards to the destruction of forests. An exemplary case is that of the Guajajara Indigenous women who use drones as part of their strategy to protect their territories. But the fundamental power dynamics are so uneven that it is hard to imagine ways to make the equation work in favor of human rights and people-centered development strategies.

This cul-de-sac imposes a reflection on science and its accountability to peoples and their communities. Far too often, benign research promoted in the name of noble goals has been turned against the people it was aiming to serve and has now become the instrument of dispossession and accumulation. On many other occasions, new scientific breakthroughs have involved spill over effects into unexpected domains, with vicious applications possibly undermining the pursuit of public goals. Some would resist any attempt to limit scientific explorations in the belief that the search of the unknown is implicitly embodied in human nature. However, applying the rule of thumb – rather than sophisticated but often biased statistical calculations – may suggest that technology contributed to widening inequalities more than it bridged them, considering how dysfunctional our economies and societies have become. It is therefore imperative to question the current paradigm of research and place science at the service of our human, social and ecological challenges. This requires much more extensive *ex-ante* assessment of which research needs to be undertaken and how to ensure that knowledge remains a public good rather than a source of citizens’ manipulation and dispossession. It also means finding new ways to subject the direction of future research to public scrutiny and democratic accountability. In this respect, Zundel and Ribeiro mention that the newly-formed UN Forum on Science, Technology and Innovation (STI Forum) and the related Technology Facilitation Mechanism have seen debate on the need for the UN to address corporate concentration and technology monopoly. Unfortunately, the 2017 session of STI Forum for the Sustainable Development Goals uncritically endorsed the 4IR/WEF agenda.

Food and the means necessary to obtain it are controlled and viewed as mere commodities by a select few of very powerful private actors within the capitalist economy. The exercise of the human right to adequate food and nutrition and peoples' food sovereignty may be impossible to achieve, unless citizens of the world can imagine, build and fight collectively. In order to succeed they will need to organize and fight from the bottom up, weaving networks from the vast majorities, and incorporating new actors into the struggle (such as those who denounce the impacts of information technologies on human rights). Together they will need to nurture and accumulate popular power, finding alternative ways of living – an alternative society, economy, and food system – which are effectively oriented to guarantee 'healthy, safe and sovereign' food for all and challenging the current multinational capitalist model of more and more money for less.

Soylent or no Soylent? That is the question.



IN BRIEF

The article describes the complex ways in which the intertwined dynamics of dematerialization, digitalization and financialization are profoundly reshaping our food systems.

It explores the new and serious impacts that these dynamics and the technologies promoted by the so-called Fourth Industrial Revolution will have on the human right to adequate food and nutrition and food sovereignty.

Lastly, it invites a critical discussion over the new challenges that peasants and social movements will have to face to defend and uphold their rights.



KEY CONCEPTS

- Dematerialization, digitalization and financialization are increasing trends that are profoundly reshaping food systems.
- The actors that promoted the Green Revolution now recognize its failure but claim to have found the way out: the so-called Fourth Industrial Revolution.
- The technologies promoted by the so-called Fourth Industrial Revolution will have new impacts on the human right to adequate food and nutrition and on food sovereignty.
- Peasants and social movements will need to shape new alliances in order to defend their rights.



KEY WORDS

- Dematerialization, digitalization and financialization
- Fourth Industrial Revolution
- Right to food and nutrition
- Food sovereignty