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Markets, Antimarkets and the Fate of the Nutrient Cycles

"We should not be too quick to assume that capitalism embraces the whole of western society, that it accounts for every stitch in the social fabric ... that our societies are organized from top to bottom in a 'capitalist system'. On the contrary, ...there is a dialectic still very much alive between capitalism on one hand, and its antithesis, the 'non-capitalism' of the lower level on the other."¹

Fernand Braudel, The Perspective of the World

This assertion, by one of the most important economic historians of this century, is an example of a new reconceptualization of history which is bound to change one day the very foundations of economic theory. The reason for its possible impact is that it targets at the core idea of economic thought, the concept of "the market". In particular, Braudel shows with a wealth of empirical data that as far back as the thirteenth century one can distinguish two completely different forms of economic institution: non-capitalist markets and capitalist antimarkets. While the former term refers to an economic institution where large numbers of small traders or producers compete anonymously, the latter term is used by Braudel to refer to what today we would call "oligopolies", that is, small numbers of large traders or producers who compete with full knowledge of one another, and hence are engaged more in rivalries than in the kind of collective competition that leads to some form of economic self-regulation.

Several things follow from Braudel's distinction between market and antimarkets. If markets and antimarkets have never been the same thing, then both those who believe in the angelical magic of the invisible hand as well as those who demonize market transactions as involving a "commodification", are wrong, the former because spontaneous coordination by an invisible hand does not apply to big business, and the latter because commodity fetishism does not apply to the products created by small business, but only to large hierarchical organizations capable of manipulating demand to create artificial needs. In other words, for people on the right and center of the political spectrum all monetary transactions, even if they involve large oligopolies or even monopolies, are considered market transactions. For the Marxist left, on the other hand, the very presence of money, regardless of whether it involves economic power or not, means that a social transaction has now been commodified and hence made part of capitalism. It is my belief that Braudel's empirical data forces us to make a distinction which is not made by the left or the right, a distinction between retail and wholesale in commerce, and between economies of scale and economies of agglomeration in production, and hence to view the institutional ecologies which inhabit urban centers, even within the restricted world of economics, as more heterogeneous than we have so far allowed. In short, accepting Braudel's challenge amounts to discarding once and for all the idea that Western societies have ever been organized in a monolithic and homogeneous "capitalist system".²

In this essay I would like briefly to examine the origins of large-scale food production systems, the core of the recent globalization and corporatization of human food chains, using some ideas from the Dutch historian Jan de Vries, who makes a clear distinction between markets and capitalism, and offers two separate models to handle each one of these two cases. The basic paradigm of antimarket agriculture is today referred to as "the Norfolk system", from the region in England where it first triumphed in the eighteenth century. The Norfolk system involved a few new crops, particularly fodder crops, and a few new machines (the seed drill), but the most important innovation was the introduction of more routinized methods for the production of both human and livestock food and, as with anything involving

antimarket institutions, the element of large scale. Yet, prior to its adoption by England, the system did not include either large scale management or labor discipline. The original system was the product of Flemish markets, more specifically, the product of the dynamic cities of Flanders in the fifteenth century (Bruges, Ypres, Ghent), market towns which stimulated their countryside into producing the basic innovations.

To understand the Flemish, and later Dutch, innovations, we can make a comparison with the methods they replaced. In simpler words, we could say that prior to these innovations the most widespread system of Western agriculture consisted of a simple method of rotation: dividing the land into two (or more) parts, one used for grain crops and the other left fallow, that is, unplanted yet plowed so that weeds could be kept out. The Flemish contribution was to eliminate the fallow period and replace it with fodder crops (such as clover). This was very important, particularly in times of rapid population growth, since in such conditions the old method could get trapped into a vicious circle: as demand for human food increased, more land was devoted to grain production and less to pasture, which diminished herd sizes as well as the amount of manure available, and this, in turn, affected soil fertility negatively. As yields declined, a higher percentage of the land had to be used for grain, exacerbating the overall decline.³

The Flemish contribution was to turn this into a virtuous circle: the rotation system was reorganized so that arable lands could contribute to the fodder supply, that is, planting clover (or later on, alfalfa or turnips) instead of letting land lie fallow. Feeding these crops to cattle, in turn, allowed herds to increase in size and hence, to multiply manure supplies. Moreover, continuously feeding back manure into the soil, as well as using fodder crops to bind the soil and preventing it from escaping the system via water or wind erosion, meant tightening the nutrient cycles, a process which takes place spontaneously in mature ecosystems (particularly rain forests, in which nutrients do not even reach the soil) and greatly contributes to their resilience.

De Vries offers an argument for the non-capitalistic character of the new system in the case of the northern Netherlands, where a modified version was developed before it became the core of the English revolution. (Only the tightening of nutrient cycles matters here, not any particular method used to achieve it). He develops two simple models to capture the dynamics of farmer response to increased rural population. The first one (which he calls "the peasant model") can be described like this: greater numbers of farmers are accommodated by dividing up the land into smaller plots, each cultivated intensively (careful plowing, weeding and fertilizing) but still aiming at self-sufficiency (as opposed to connecting with outside markets). The labor intensive character of this strategy, however, meant that farmer productivity actually declined in the transition period, making the farming population more vulnerable to famines and to the depredation of antimarkets and aristocracies, which took advantage of the situation to amass land and revise leasing contracts. A second scenario (which he calls the "specialization model") involves turning to specialized crops aimed at urban markets but with the farmers themselves keeping control of the process. As he writes:

"The predatory role of capitalists and nobleman in the peasant model has no counterpart in the specialization model since peasants themselves reorganize production in response to market opportunities and themselves reap the benefits".⁴

Jan de Vries argues that it is this second model that applies to the case of the Netherlands from the seventeenth century on, even if many other factors (field patterns, legal system, family structure) need to be added to the model in order to account for regional variations.

Also, the new farms offered opportunities for investment by Amsterdam's wealthy classes, and so subtler forms of antimarket infiltration also took place. And yet, despite their many mixtures in practice, markets and antimarkets must be kept as separate elements in our historical reconstructions. Indeed, this agricultural system only became truly "capitalist", in Braudel's sense, when it was given a large scale and was combined with disciplinary management, that is, in eighteenth century England, where vast tracts of land were submitted to intensive methods and enclosed on all sides with hedges, and where labor practices began to be routinized, and intermediate classes (small-holders, rural tradesmen), eliminated.⁵ By the mid 1800's, the Norfolk system acquired even larger scale and a higher degree of routinization in the United States, Australia and Argentina. Moreover, the very tight nutrient cycles which characterized the original Flemish method were suddenly split wide open as natural and artificial fertilizers began to be used as inputs to agricultural production. In the United States, for example, fertilizer began coming in from as far away as Chile. As one historian puts it:

"Commercial fertilizers in the United States date back to **1830** when Chilean nitrate was first imported. The first chemical fertilizer plant was established in **1850** in Baltimore, and other plants were soon built along the Atlantic Coast. The four most common commercial fertilizers were Peruvian guano (bird dung), fish guano, gypsum, and super phosphate. The use of fertilizer developed at a slow rate because large areas of fertile virgin lands were still available for production. As time passed, the nutrients in the soil, even in the new regions, became depleted and the use of fertilizers rose rapidly. In the United States, by-products from meat-packing plants, especially bones, residues from plant oil industries, and scrap from fish canneries, were some of the earliest fertilizers."⁶

From the point of view of this essay, that is, as far as the distinction between markets and antimarkets is concerned, the splitting open of the nutrient cycles had important consequences. Every input to food production which came from outside the farm (not only fertilizers but also insecticides and herbicides) was one more point of entry for antimarkets, and hence, it implied a further loss of control by the food producers. While a century and a half ago farms produced most of what they needed (and hence ran on tight nutrient cycles), today American farms receive up to seventy percent of their inputs (including seed) from the outside.⁷ Worse yet, the advent of direct genetic manipulation has allowed large corporations to intensify this dependency.

Although most of the early technical innovations in biotechnology were created by small companies engaged in market relations, antimarket organizations, using the economic power which their large size gives them, readily absorbed these innovators through vertical and horizontal integration. Moreover, these antimarkets were in many cases the same ones which already owned seed and fertilizer/pesticide divisions. Hence, rather than transferring genes for pest-resistance into new crop plants (thus freeing food producers from the need to buy pesticides) these corporations permanently fixed dependence on chemicals into the genetic base of the crops.

For instance, corporations such as Dupont or Monsanto which create weed-killers, developed crop plants that withstood these chemical attacks by transferring genes from weeds which had developed resistance to these substances to new crop varieties, thus genetically freezing farmers' dependence on external inputs. On the other hand, some of the genetic materials that are being selected by corporations are related not to nutritional value but to the processing properties of the final product, that is properties directly related to the homogenized, "assembly-line" routines that characterize antimarket food production. As one author puts it:

"Crops in the field must first meet the tests of yield, uniform growth and simultaneous maturity. After this, their fruit or kernels must be able to withstand the rigors of mechanical harvesting, repeated handling, and various kinds of transport from one point to another. Next come the trials of steaming, crushing, or canning. In some cases, the raw agricultural crop must 'store well' or 'travel well', or be good for freezing or frying. And genes are the keys to meeting each of these steps in the food-making process; the genes that control the field-to-table characteristics of every crop from broccoli to wheat. In this process the genes that matter are those of yield, tensile strength, durability, and long shelf life. However, the genes for nutrition—if considered at all—are for the most part ignored." ⁸

Even in situations where multinational corporations are not directly involved in gene manipulation, subordinating the evolution of crops to the processing end of the food chain, the dangers of splitting the nutrient cycles open are a cause of concern. Take for example the "Green Revolution" of the 1950's, introduced in the third world with the goal of making these countries nutritionally self-sufficient, a goal which in itself may be considered admirable. Here the genes selected (not through biotechnology but via older breeding techniques to create "hybrid plants") were those which redirected photosynthetic activity away from inedible stems and towards the production of edible grain. This meant much higher yields, and for a while, the food base of countries like Mexico, the Philippines and India was indeed strengthened by the new miracle crops. The problem was that the new breeds involved large amounts of outside inputs (fertilizer), and in the absence of chemical fertilizer their yields were not nearly as impressive, and worse, the open nutrient cycles made farmers vulnerable to outside monopolies: when the Arab oil cartel increased prices in the early 1970's, fertilizer costs increased dramatically and the Green Revolution collapsed.

Moreover, despite its original goal of benefiting food producers, the lack of a clear distinction between markets and antimarkets allowed many undesirable side effects: the basic set-up happened to profit from economies of scale (for instance, in terms of irrigation costs) and therefore ended up benefiting large farmers, stimulating a process of consolidation in which many small farms disappeared.⁹

I would like to end this rather brief examination of the fate of the nutrient cycles with some general remarks. First of all, the importance of the distinction between markets and antimarkets, or what amounts to the same thing, of giving up the notion of a homogeneous and all-embracing "capitalist system", goes beyond any considerations specific to agricultural history. Rather, its true importance lies in the fact that it liberates us from a teleological view of economic history as an inevitable progression of modes of production. The industrial revolution, for example, ceases to be a necessary stage of development through which all societies must go on their way to maturity, and becomes a particular paradigm of production which just happens to have spread through the population of economic institutions due to the power of economies of scale and routinization. Hence, when we look at economic history without "teleological glasses", we can rediscover alternative paradigms based on decentralized production, flexible skills and regional economies of agglomeration, without a trace of nostalgia for a lost golden age. These alternatives present themselves as nostalgic only when centralized, homogenized economic models are seen as a mark of inevitable progress. The work of Fernand Braudel, and of many of his followers, has been crucial in this rediscovery of a highly heterogeneous economic history, a history without fixed ages (the feudal age, the industrial age) and full of complex coexistences between alternative paradigms. To Braudel this implied the need to rethink not only the past but more importantly, our alternatives for the future. Hence I find it fitting to end this essay with the very last paragraph of what many consider his most important work, a concluding paragraph which

summarizes his basic theoretical position and expresses his views on the political consequences of this position:

"If we are prepared to make an unequivocal distinction between the market economy and capitalism, might this offer us a way of avoiding that 'all or nothing' which politicians are always putting to us, as if it was impossible to retain the market economy without giving the monopolies a free hand, without nationalizing everything in sight? ... As long as the solutions put forward amount to replacing the monopoly of capital with the monopoly of the State, compounding the faults of the former with those of the latter, it is hardly surprising that the classic left-wing solutions do not arouse great electoral enthusiasm. If people set about looking for them, seriously and honestly, economic solutions could be found which would extend the area of the market and would put at its disposal the economic advantages so far kept to itself by one dominant group of society." ¹⁰

References

¹ Fernand Braudel, *The Perspective of the World*, New York: Harper and Row, 1986, p. 630.

² See detailed arguments and references in: Manuel DeLanda. *A Thousand Years of Nonlinear History*, New York: Zone Books, 1997, Chapter one.

³ Jan De Vries, *The Dutch Rural Economy in the Golden Age, 1500—1700*, New Haven: Yale University Press, 1974, p. 149.

⁴ *ibid.* p. 8.

⁵ G.E. Fussell, *The Agricultural Revolution, 1600—1850, Technology in Western Civilization. Vol 1.* (Melvin Kranzberg and Carrol W. Pursell eds.), New York: Oxford University Press, 1967, p. 142.

⁶ Georg Borgstrom, Food and Agriculture in the Nineteenth Century, *Technology in Western Civilization. Vol 1.* op. cit. p. 413.

⁷ Jack Doyle, *Altered Harvest. Agriculture, Genetics and the Fate of the World's Food Supply.* New York: Viking, 1985, pp. 116—117.

⁸ *ibid.* p. 138.

⁹ *ibid.* pp. 261—263.

¹⁰ Fernand Braudel, *The Perspective of the World.* op. cit. p. 632.