

A Dialectical Approach to Social Restructuring and Technical Change in Greek Agriculture

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Abstract

This paper investigates the dialectic between social restructuring and technical change within the transition to capitalism in Greek agriculture. Contrary to neo-populist interpretations, it is argued that capitalism has developed considerably, and that technical change has played a major role in the process of class differentiation and capitalist development. While the new capitalist strategy for agricultural restructuring has reinforced the process of concentration and capitalist development, with a devastating impact on small farmers, it is argued that the social conflicts involved and the recent agrarian mobilisations tend to form an alternative strategy for the semi-proletarianised 'working class', negating both neo-populism and capitalist modernisation.

Key words: *Greek agriculture, technology, class differentiation, capitalist restructuring, development.*

Introduction

Both the international and Greek literature regarding the social restructuring and technical change in Greek agriculture is rather slim. Nevertheless, a significant debate evolved in the 70s and '80s, regarding either productivity or peasant farming in Greece (Vergopoulos 1978, Mouzelis 1979), or a rather unsuccessful attempt to interpret the crisis facing Greek agriculture as a crisis of the Fordist mode of regulation (Maniatae 1986, Martinos 1987). A more recent literature, which seems to be partly influenced by Vergopoulos, follows a neo-populist approach, argues for the viability of peasant farming, and is highly misleading as it over-stresses, in a post-modernist fashion, the particularity and heterogeneity (*difference*) of Greek family farming (Goussios 1995, Kasimis and Papadopoulos 1994, 1997, Damianakos 1997)¹. What is more, very few attempts have been made to research the technical change in the agricultural sector and its implications (see Liodakis 1987, Samaras et al. 1994). A deterministic approach has been followed in most cases, assuming an exogenous and socially neutral character of technology, and only the impact of its application has been investigated, not its social shaping², nor the economic terms under which it can be introduced in production.

The dominance of the neo-populist approach (whether neoclassical or Marxisant) has prevented a correct understanding of the underlying processes of class differentiation in the countryside and of the extent to which the capitalist mode of production has actually laid roots in the agricultural sector. Moreover, it has prevented an adequate understanding of the role technology plays in this process, while it has often blurred or misled the emancipatory struggle of the poor and semi-proletarianised farmers. So, a Marxist approach enriched by international experience, focusing on exploitation and class formation at the level of agricultural production, and on the dialectical relation of the latter with technical change, is long overdue. In section 2 of this paper, we will pre-

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sent a preliminary empirical investigation of the social restructuring and the role of technical change in this process. In section 3 we will discuss the dialectic of technical change and class differentiation, and trace real development trends during the last few decades. Finally, an attempt will be made, in section 4, to illuminate the current restructuring and technical change in Greek agriculture, and to interpret some aspects of the ideological and political conflicts involved.

The main trends of agricultural restructuring and technical change

Contrary to various neo-populist interpretations, it will be argued that, in fact, a considerable development of capitalism in the country's agricultural sector, though slow and painful, has led to increasing class differentiation and the demise of the peasantry. The development of capitalism in agriculture, whether from above (following the Junker model) or from below (following the American way), has of course faced serious obstacles in all countries (see Byres 1996), relating either to the peculiarities of nature and the biological element of agriculture, or to the nature of the pre-existing forms of production and the socio-historical conditions prevailing in each particular country or region. Despite all these obstacles and additional institutional or cultural difficulties in the case of Greece (see Sakellaropoulos 1986), the capitalist mode of production has slowly pushed its way through, and the once relatively homogeneous peasantry has been largely differentiated and proletarianised during the last three or four decades (see, more specifically, Lioukakis 1999).

The rapid commoditisation of production constitutes an important evidence for the development of capitalism in Greek agriculture. While in the pre-war period and still in the 1950s self-subsistence production was the exclusive or dominant goal of most agricultural production, its rapid commoditisation since the 1960s operated as a catalyst for the class differentiation of the peasants and the development of capitalism. What is more, the means of agricultural production (the 'inputs'), as well as the means of consumption and reproduction of rural labour, have also been increasingly commoditised, particularly during the last two decades. This means that the real subsumption of both labour and agricultural production are already well under way.

Another aspect regarding the demise of the peasantry and its rapid proletarianisation is the massive depopulation of and exodus from the countryside. It is impressive indeed that the economically active population in agriculture declined, as a percentage of the total, from 56.3 per cent in 1961 to 29.4 per cent in 1981, and 19.2 per cent in 1996. The unsustainability of peasant farming is also reflected by the dramatic demographic degeneration, particularly where peasant farming yet persists more extensively. Presently, the average age of household heads is approaching 60 and the number of heads of an age less than 44 is less than 20 per cent. The persisting large numbers of family households are largely fictitious and a mere statistical illusion that will very soon collapse, as the extensive subsidies which have sustained a great number of unviable farms during the last two decades are gradually reduced, and as the biological limits of the majority of the household heads are reached.

Despite land fragmentation, the census statistics of the National Statistical Service of Greece (NSSG) indicate that the number of small farms (with less than 5 hectares) has declined in the period 1961-1991, while the number of relatively large, by Greek standards, or large farms (with more than 10 hectares) has increased (see also Lianos and Parliarou 1987). The total land possessed by households with a small or relatively small acreage (less than 10 hectares) has also declined, while the land possessed by households with a large acreage (greater than 10 hectares) has increased. Land concentration has been greater in the Northern flat regions, specialising in crop production, where mechanisation is easier and the capitalist organisation of production becomes

more favourable. The concentration of land is also indirectly reinforced through land leasing, which has increased in the post-war period to reach, already in the early 1980s, approximately 25 per cent of the total operated land on a national level. There is also evidence that most of this land is leased-in by large farms, especially in the above-mentioned areas (see Moissidis 1986, Panitsidis 1992).

Land concentration is of course inadequately reflecting the development of capitalist production in agriculture. As already pointed out by Kautsky and Lenin, it is only an inadequate index of the scale of production. A farm with a small landholding under intensive cultivation (e.g. greenhouse production) may be of larger scale, in an economic sense, than another farm with extensive production and a larger acreage. As Kautsky (1988: 148) has observed, the profitable (efficient) farm size is inversely related to the capital intensity of production, but technical advances can change the minimum efficient farm size. So, apart from acreage, we need to take into account the method and the necessary means of production (capital stock), as well as the gross value of a farm's output, in order to determine the actual scale of production (Patnaik 1987: 31-36). Beside concentration and scale of production, some complementary criteria need to be taken into account in order to categorise a certain farm or number of farms as capitalist or not. The relevant criteria considered in the Marxist literature (see Lenin 1964, Patnaik 1987: 24-30) concern: (a) the possession of land and other means of production, (b) the labour hired in and out, and (c) the extent to which a farm's production ensures subsistence and potentially an investible surplus. An empirical investigation using these complementary criteria is certainly required, but this is another project beyond the limits of the present paper.

A classification of Greek agricultural households, along these lines, would undoubtedly show that a considerable percentage of them can be characterised as capitalist³. This does not, however, imply that we should expect a complete elimination of peasant farming and an absolute class polarisation in the sector (see Kautsky 1988: 164, 166, Bernstein 1994: 55). Not just the urban capital, as Vergopoulos (1978) assumes, but also the rural bourgeoisie needs small farming as a condition for its development. However, they both occasionally tend to destroy and eliminate small peasants. Industrial capital seeks to ensure wage labour and an expanded market, while rural capital (large farmers) needs to expand their land and ensure the required wage labour. The outcome of this conflict depends on the competitive struggle between these two fractions of the bourgeoisie⁴, and on a series of conjunctural factors.

Also remarkably, agricultural co-operatives have traditionally developed under the auspices and tight control of the state. Limited to the provision of inputs and to marketing and credit activities, with no involvement in productive activities, co-operatives have not been able to protect the real interests of the small farmers. Instead, as in most capitalist countries (see Kautsky 1988: 124-25, Dyer 1991), they have benefited the large farmers more and have functioned as a vehicle of further class differentiation. This applies both to the compulsory co-operatives which developed in the early post-war period (see Louloudis et al. 1989) and to the at least formally voluntary co-operatives which developed extensively after the Socialist Party (PASOK) came to power in 1981. These latter co-operatives have in fact worked as a paternalistic institutional mechanism ensuring a partisan clientalism (Louloudis and Maraveyas 1997), and as a preferred instrument of state modernisation policy.

It should also be noted that the official statistics provided for permanent wage labour employed by Greek farm households are obviously very inadequate, not only due to inadequate registration, but also because these statistics disregard the extensive seasonal and casual exploitation of wage labour, which is not less evidence, compared to permanent employment, of the development of capitalist relations of production.

Moreover, we should take into account 200 thousand immigrant workers who are miserably exploited in the agricultural sector.

Another important aspect regards the off-farm employment and multiple job-holding, the so-called *pluriactivity*, which according to available evidence is extensive in the agricultural sector, and tends to rise during the last two decades (Damianos et al. 1991, Kasimis and Papadopoulos 1994). Contrary to interpretations considering that off-farm employment ensures the survival and reinforces the persistence of peasant family farming (Damianakos 1997), I would argue that off-farm employment ensures most likely only a temporary survival of small peasant farms, while in the long-run it operates as a catalyst for the fullest commoditisation of rural labour and the complete proletarianisation of small farmers (see also Goodman and Redclift 1982: 23). This effect will be further reinforced by the implementation of the recently drafted Farmers' Register. Thus, *pluriactivity* constitutes just another form of class differentiation and peasant proletarianisation.

Although an adequate empirical substantiation of our argument, regarding the development of capitalism in agriculture, cannot be offered here, either for lack of appropriate statistical evidence or for lack of space, the results of a research programme for the case of Crete, coordinated by this author, are surely indicative. Despite the extreme land fragmentation in the case of Crete, the rough and mountainous character of most available land, and the fact that capitalist development takes mostly an enclave form, concerning greenhouse production and a few other products, it can be reported that, according to this research, 25% of the labour utilised by households for agricultural production is hired wage labour. Moreover, 30% of the total labour of agricultural households is employed in off-farm (mainly non-agricultural) activities, and about 40% of the total income of agricultural households comes from this off-farm employment. Apart from the formal independence of most agricultural households and independently of the employment of wage labour, there is further evidence showing a considerable real subsumption of agricultural labour under capital contacted through the market.

It should further be stressed that the availability itself of wage labour is not a sufficient condition for the development of capitalist relations in production. The conditions for the valorisation of capital are in fact crucial for the formation of both class poles of the capitalist relation, and these conditions are also determined by technological developments, shifts in the relevant international division of labour, state intervention and subsidisation, and the changing demand for agricultural products. These changing conditions, the generally unfavourable conditions for the development and valorisation of capital in agriculture, and their deterioration since the mid-1970s, have specifically determined the pattern of development and have induced a continuous quest for new inroads in the countryside and new opportunities for the investment of capital, particularly in branches or in areas where mechanisation and modern science could be applied to ensure at least the socially average rate of profit. Thus, an increasing polarisation has developed, but of course not an absolute separation, between the less fertile and mountainous areas, on the one hand, characterised by a considerable backwardness, and the more fertile plain zones, on the other, where agricultural development has been more specifically focused and the capitalist mode of production has put down more extensive roots.

This extreme spatial unevenness in the development of Greek agriculture, which to a varying extent also characterises European agriculture (see Goodman and Redclift 1988), has been pointed out in the relevant literature (Kasimis and Papadopoulos 1994, Damianakos 1997). This unevenness, however, has been interpreted either simply as a result of the extreme natural diversity of the Greek countryside or by means of a traditional dualism, namely as a distinction between a 'modern' and a 'traditional' sector,

and not as a result of the increasing embedment of the capitalist mode of production in Greek agriculture.

In fact, more extensive technical innovations (mechanisation, irrigation, etc.), in the flat and more fertile zones, have increased labour productivity, and the more profitable conditions of production have given rise to higher rates of capitalist development. On the other hand, the rates of technological modernisation have been lower in the mountainous zones, where more traditional methods of production are still used and most family farms, particularly the small ones, are hardly surviving. There too, subsistence production tends to decrease rapidly, and economic survival is often ensured only through off-farm employment in the capitalist farms of the productive zone or in non-agricultural sectors. This shows not only an increasing proletarianisation, but also the inter-regional dimension that this process often takes. An increasing share of the agricultural marketed production is supplied by the most productive zones, while the marginal farmers in the less productive and increasingly abandoned zones have increasingly to resort to the market to sell at least part of their labour power for survival. This has crucial implications for the formation -- however slow -- of the rural proletariat (or semi-proletariat) as a class-in-itself and also for its increasing class-consciousness. The extensive survival of small peasant farmers, particularly in these unproductive zones, is not so much because they are functional to urban capitalism, as it is a conditional survival insofar as capital does not need their land, and their complete proletarianisation might occasionally become dangerous, as is the case with the restricted opportunities for industrial employment since the mid-1970s, and as unemployment rises very high. At the same time, land-augmenting technical innovations applied mainly in the flat and more fertile zones, and the increase in labour productivity have tended to reduce the pressure to dispossess small peasants in the mountainous highlands. The economic significance of land in these regions has declined and land-rents and prices have also drastically decreased. This fact, as well as a considerable blurring of land property rights, due to 'absentee farming', have tended to reduce sales and retard land restructuring and concentration, and hence the development of capitalist production. This dynamic tends to reinforce even further the regional dualism and the uneven capitalist development outlined above⁵.

The previous argument should not be interpreted as implying that the extensive survival of small peasant farming is one-sidedly determined from the side of capital. Social or class resistance from the side of peasant farmers themselves plays also a considerable role. This resistance for survival may take a variety of different forms. On the one hand, it may concern a temporary recourse to self-subsistence, or a co-operative organisation and action, ensuring survival and retarding class differentiation and capitalist development. On the other hand, this resistance may be associated with the struggle to maintain the control of basic means of production (land, seed, etc.), to adhere to traditional labour intensive methods of production, and to oppose a capital-minded technical modernisation.

The transition to capitalism, analysed so far, has evolved along with a quite rapid and very deep technical transformation of Greek agriculture. Apart from reinforcing class differentiation, this technological modernisation partly presupposes the development of capitalist relations of production. First, because it is the money capital holders and the large commercialised farms, which can invest more in machinery, equipment, and modern methods of production. Second, because a particular land (size) structure and a sufficiently stable tenure system are often a precondition for the efficient use of certain machinery or technical innovations (see Griffin 1979: 60]. Third, because the exploitation of wage labour and the more rational capitalist organisation of production can ensure more effectively, than pre-capitalist forms, the profitable introduction of new techniques and the full amortisation of invested capital. It is, finally, the generalisation

of commodity production and capitalism, in general, that under the pressure of competition leads to a continuous revolutionisation of the means and methods of production.

Examining this process of technical transformation in general, we should first note that Greek agriculture in the 1950s and early 1960s was still using largely traditional methods and means of production. It was characteristic, for instance, that each peasant family usually had two or more bullocks (cows) to be used as draft animals for ploughing. As commoditisation of agricultural production gradually increased and the competitive pressure of the market became an important determinant of farm reproduction, bullocks were extensively replaced by donkeys, which were cheaper to maintain. More significantly, however, as human and animal labour became costlier than mechanisation (see also Rao 1975: 23), they were increasingly displaced by agricultural mechanisation (tractors, threshing machines, etc.). Within a period of 10-20 years, up until the late 1970s, bullocks were totally eliminated in several rural regions. Various forms of mechanisation have been applied and expanded rapidly, particularly since the 1970s. The evidence presented in Table 1 can partly illuminate this process. Vergopoulos (1978) and some other authors argue that there has been an over-mechanisation in Greek agriculture, and there are indeed cases where machinery (tractors, etc.) is used as prestige or status symbols. There is also, on the average, a low degree of utilisation of agricultural machinery, which should also be attributed to land fragmentation and the prevailing capitalist relations of production. The over-mechanisation argument, however, is misleading insofar as it arbitrarily abstracts from existing international standards and competition (Lioudakis 1987, Samaras et al. 1994: 78-80, 325-27).

Table 1: Agricultural machinery in use

| | Agricultural Tractors | Harvester-threshers (combines) | Irrigation spray systems | Wheat sowing machines | Milking Machines |
|------|-----------------------|--------------------------------|--------------------------|-----------------------|------------------|
| 1965 | 31,519 | 3,763 | 12,836 | 5,780 | 4,050 |
| 1970 | 61,945 | 4,151 | 49,042 | 12,662 | 4,300 |
| 1975 | 93,424 | 5,234 | 83,476 | 19,277 | 4,600 |
| 1980 | 140,305 | 6,109 | 114,576 | 30,815 | 5,200 |
| 1985 | 183,410 | 6,566 | 136,211 | 39,970 | 6,180 |
| 1990 | 215,755 | 6,247 | 184,820 | 45,306 | 12,366 |
| 1995 | 232,000 | 6,100 | ... | ... | 13,400 |

Source: NSSG, *Statistical Yearbook*, and FAOSTAT Database.

Considerable progress has been realised in agricultural irrigation, approaching 35 per cent of the total operated land in the mid-1990s. Spray units and gun systems of irrigation have expanded during the 1970s and 1980s, while drop irrigation has spread widely during the last two decades. The use of fertilisers and pesticides has increased dramatically. According to available evidence, the use of agro-pharmaceutical products has increased in the period 1965-87 by 29 times (Samaras et al. 1994: 92-97). Due to inadequate agricultural research and extension services, there are many cases of irrational use of both fertilisers and pesticides, which increase production cost and have negative environmental effects. Within the context of the 'Green Revolution', some high quality hybrids, particularly of corn, the outcome of successful domestic research, have been used in production since the early 1970s and, especially when combined with

irrigation, give very high yields. Apart from HYV seeds, certain improved varieties of fruits and some new strains of livestock have been introduced in production with very high returns. Although there is considerable potential for the development of domestic research and production in these areas, the needs of Greek agriculture for plant and animal genetic material are increasingly met by imports. The same is true with the necessary fodder for stockbreeding. Considerable concentration and the use of some modern methods in livestock breeding have led to some improvements in returns, despite the overall backward character of livestock production. Similarly the expansion of protected cultivation has improved agricultural returns. Greenhouse cultivation has increased from 1.6 thousand hectares in 1970 to 3.1 thousand in 1980, and about 5.0 thousand hectares in the early 1990s.

These technical changes and the increase of investment in agriculture have greatly increased labour productivity and the sector's total productive forces. Although the total investment in the sector, and particularly private investment, has drastically declined in real terms since the late 1970s, the aggregate capital stock, in constant prices, has increased by 77.6 per cent in the period 1960-90. According to available evidence, the technical modernisation and development of the agricultural sector had more of an extensive (land-augmenting) character in the 1960s, but since the 1970s it becomes more intensive (Liodakis 1987). Apart from its impact on productivity, technical change, as in all capitalist countries, has largely amounted to an instrument of capital for an ever greater sapping of the two original sources of all wealth, namely of labour and nature (see Marx 1967, I: 505-507, III: 812-13). But a more detailed dialectical treatment of technical change is here necessary.

The dialectic of technical change and social differentiation: an interpretation of recent trends

Examining the dialectic of technical change in Greek agriculture, we should consider both the social shaping of agricultural technology, as an endogenous and socially non-neutral factor of production, and the main causes promoting the application and diffusion of technical innovations on a farm level. Subsequently we shall briefly analyse the impact of technical change on social differentiation, agricultural restructuring, labour employment, and the environment.

Technology in general and agricultural technology in particular should not be considered as an exogenous determinant factor, but as a socially shaped and endogenously determined factor within the overall context of the productive process (Liodakis 1997). Although most of the technology currently used is produced in the advanced capitalist countries, and the relevant TNCs can often produce and impose technologies which are ill-suited to the specific needs and the particular characteristics of farming in a particular social and regional context, such as Greek agriculture, it is the farmers and the agricultural processors who decide whether or not to use a particular technical innovation. In this sense, the social structure and the economic conditions prevailing in agriculture, if not exclusively determinant, play ultimately the most important role in determining the pattern and the rate of adoption and diffusion of technical innovations on a farm level. The factors usually considered as determining technical change include the level of per capita income, wage rates, agricultural prices and terms of trade more generally, and the accessibility and terms of agricultural finance. Rising wages create an incentive to save on labour cost, particularly by large farmers, which is further enhanced insofar as more intensive utilisation of land gives greater scope for increased use of labour (see Rao 1975: chs. 3, 4).

This obviously implies that the (level of) capitalist development in agriculture is a major determinant of the rate, the character, and the orientation of technical change.

The large and commercialised (most likely capitalist) farms obviously face a greater competitive pressure necessitating a cost reduction, which can partly be achieved through greater technical innovation and the introduction of new means and methods of production. The relatively greater use of wage labour by these farms also induces a greater, labour-saving, technical change. At the same time, it is these larger, capitalist farms, which can potentially avail a greater investible surplus and financially support a greater technical modernisation.

Technical change can be, moreover, determined by land tenure and the available agricultural infrastructure (Griffin 1979: 60), by the profitability conditions (valorisation of capital) and the level of agricultural investment, by the education and training of farmers, and by the extent to which local productive knowledge can be fruitfully inter-related with scientific knowledge. This becomes particularly important as we move from traditional mechanical innovation to process innovation and to the knowledge-intensive techniques of the current bio-revolution (BR).

In Greek agriculture, mechanisation was the main form of technical change during the 1960s. After the massive rural exodus of the 1950s and early 1960s, mechanisation was a way to release labour constraints. This was particularly the case in the 1970s and 1980s. Despite still extensive disguised unemployment in the rural sector, the rising standard of living and the relative scarcity of wage labour led to a considerable increase in agricultural wages, and made mechanisation even more necessary. Mechanisation has been combined, especially since the late 1960s, with an increasing use of irrigation, fertilisers, pesticides, and improved seeds (HYVs). This combination, which is characteristic of the so-called Green Revolution (GR), has been used quite extensively, particularly in the flat and fertile regions of central and northern Greece. The technical changes of this type have largely determined the regional and product specialisation pattern of Greek agriculture. Under these conditions, extensive cultivations and the production of crops such as maize, cotton, and rice increased considerably in the above-mentioned regions. On the other hand, the southern regions and the islands have specialised more in labour-intensive cultivations, including wine, fruits and vegetable products. Apart from technical changes, the pattern of specialisation has, of course, also been determined by international trade and by certain regulations and support funding from the CAP. Such is, for example, the case with cotton, the cultivation of which, mainly in Thessaly, increased dramatically from 126 thousand hectares in 1981 to about 440 thousands in 1995. The mechanisation and more general technical modernisation of Greek agriculture have also been reinforced by the relative improvement of the agricultural terms of trade in the 1970s, considerable financial support by the state, and the CAP after 1981, and by easy bank credit (see Liodakis 1987, 1991).

The deteriorating conditions of accumulation in the agricultural sector since the mid- 1970s and the relative decline in the sectoral terms of trade since the early 1980s have, however, generated considerable constraints on modernisation and technical change. This has been reflected in the decline of both total investment in the sector and investments in agricultural machinery (see Mergos and Psaltopoulos 1996). The structural problems of Greek agriculture, inadequate education and information, and the aging of Greek farmers create additional constraints, which are particularly important with regard to the adoption of new technologies. The recent inflow of immigrants and the intensification of labour in agriculture may also have had a negative impact on technical change. All these factors may have retarded, but certainly have not stopped, the process of technical modernisation. Technical change is rather now more selectively targeted, increasingly associated with new technologies, and aimed at a drastic increase in labour productivity and at a similar improvement in the conditions of accumulation. A historical overview of the process of technical change leads to the observation that it has developed with an extremely uneven pattern and with great branch differences and re-

gional diversities. This unevenness has been reinforced even further, and should be expected to differentiate further, as a result of the far-reaching developments brought about by the current BR (see Buttel et al. 1985, Ahmed 1988, Kloppenburg 1988). It can also be observed that the pattern of technical change in Greek agriculture has been closely related to the pattern of capital accumulation.

Apart from its impact on labour productivity and its environmental implications, the technical modernisation of Greek agriculture, far from being socially neutral, has reinforced the process of class differentiation and proletarianisation of the agricultural population. As the large farms are, in general, more capable of utilising and exploiting technical changes than small farms, there is more or less general agreement in the relevant literature pointing to the class-differentiating impact of technical change (Rao 1975: 150, Griffin 1979: 47, 78, Byres 1981, Patnaik 1987: 199-207, Meagher 1990). Technical change is a factor turning around the traditional so-called 'inverse relationship'. Although some authors have argued that technology, and more specifically GR bio-chemical techniques, are scale-neutral and should be promoted to alleviate poverty (Griffin 1979: 66-69, Ahmed 1976, 1988), this argument has been rejected. The large farms, in fact, have an advantage over the small ones, not only in respect of mechanical innovations, but also with regard to the use of process innovations and bio-chemical agricultural inputs. The advantages of the large farms are, in general, determined by the large farm size, organisation (most likely a capitalist form), greater access to financial resources, greater capacity to bear the innovation risk, and usually more adequate education and information. In the case of bio-chemical innovations and inputs, most of the above advantages of large farms apply as well. In addition, the apparent 'neutrality' of these innovations is practically offset by a specific complementarity of these innovations or inputs with other mechanical equipment (tractors, etc.) or irrigation, which are accompanied by strong scale economies (Rao 1975: 44-52, Byres 1981, Meagher 1990, Dyer 1991, Samaras et al. 1994: 335). With technical change as a powerful means of competition, the large farms are usually capable of out-competing and dispossessing smaller farmers, and thus of leading to greater land and production concentration in agriculture. Although more systematic empirical research on the class-differentiating impact of technical change in Greek agriculture is surely required, the existing research on a local, regional, and national level clearly confirms this impact of technical change (see Liodakis 1987, Louloudis et al. 1989, Kasimis and Papadopoulos 1994, Samaras et al. 1994).

Apart from its function as a means of competition and concentration, technical change has also served as a means to increase labour productivity and exploitation, and thus as a route for capitalist expansion in agriculture and for an increasing valorisation of nature. It has moreover contributed to the increasing internationalisation of Greek agriculture. The increasing export-orientation of production after the mid-70s and international competition have necessitated increasing rates of technical modernisation, and this in turn has entailed both the import of agricultural machinery and advanced inputs, and a continuous attempt to increase agricultural exports.

The net employment impact both of mechanisation and other (bio-chemical) technical changes is highly controversial, as one has to take into account, beside the direct labour-displacing effect of these changes, also the positive output effect and the employment involved in the development and application of the relevant innovations (see Rao 1975: 111-15, Byres 1981, Ahmed 1988). I shall argue, however, that the overall employment impact of technical change in capitalist agriculture is negative. This is particularly the case for some mechanical innovations, such as the harvester-thresher combines, which are particularly labour-displacing, but perhaps even more significantly so in the case of pesticide-resistant and herbicide-dependent seeds developed in the context of the current BR. Unfortunately, there is a characteristic lack of relevant empirical re-

search in Greek agriculture. The fact that the economically active population in the Greek countryside has been halved in the period 1960-90, and there is a further prospect for its reduction by one third during the 1990s, may be the result of the more general restructuring and transformation of Greek agriculture. But it does not, most likely, reflect any employment or socially neutral technical change.

It would be wrong, however, to argue, as some researchers do (Griffin 1979: 81, Ahmed 1988), against mechanisation, or for preventing the development and diffusion of herbicide-dependent seeds, or for the need to develop a locally 'appropriate technology'. This argument is, on the one hand, somewhat utopian, and on the other hand misleading insofar as it obscures the positive (emancipatory) effect deriving from the relevant labour release. If anything, one should seek to resolve the employment problem through institutional measures and social transformation, rather than through technical change (see Edquist 1985: 168). In capitalism, of course, the above-mentioned empowering effect of technical change has only a restricted class basis. On the other side, the environmental degradation caused by the increasing technical modernisation of Greek agriculture has tended to destroy the natural basis on which especially poor farmers earn their subsistence. More important still, the increasing dependence of farmers on the market and their attachment to MNCs for the necessary provisions have had a multiple dis-empowering effect at least on the majority of small farmers. On the one hand, the increasing dependence on mechanical equipment usually controlled by large farmers and on commercial pesticides has led to a gradual deskilling of farmers. The control over the agricultural labour process has largely been lost, through the increased use of industrialised and technological inputs, and shifted in favour of the TNCs involved in the production of these inputs (see Vandeman 1995). As the majority of Greek farmers have increasingly been divorced from their own seeds as a means of production, this has signified a far-reaching process of the so-called primitive (or primary) accumulation of capital (see Kloppenburg 1988: 281). At the same time, as the current BR has shifted from the more public character of the research associated with GR technologies to an increasing privatisation of research and control over the new technologies, the subordination to the capitalist market and the risk facing agricultural producers has risen sharply⁶. This increased dependence and risk lead to a further dis-empowerment, and tend to undermine, or ruin and proletarianise, the smaller farmers. This is a clear manifestation of the socially non-neutral character of technology and of the class-differentiating impact of technical change.

These consequences of technical change have increased social polarisation and reinforced the development of capitalism in Greek agriculture. As we have observed, capitalist relations are partly a precondition for technical change and the development of productive forces in general. In turn, technical change reinforces the development and embedment of capitalist relations in agriculture. Here the dialectical cycle closes or, more appropriately, an up-swing of the ever-opening and expanding dialectical spiral is completed.

Concluding remarks and political implications

Contrary to neo-populist interpretations, we have seen that capitalism has considerably developed in Greek agriculture during the last four decades, not only through the integration within the national and international economy via market circulation, but also in the form of an increasing entrenchment of the capitalist mode of production in agricultural production itself. Modernisation and technical change, albeit developing with an extremely uneven and diverse pattern, have gone quite far. Apart from the commoditisation of production and market competition, this technical change has further reinforced class differentiation and capitalist development in the agricultural sector.

Insofar as class differentiation increases, an underlying process of class formation tends on the one hand to develop a capitalist pole (rural bourgeoisie), and on the other hand to bring together as a class-in-itself the landless rural workers, the semi-proletarianised small peasants, and the proletarianised labour employed in the service sector (mainly in tourism) of rural areas. This process is underway, despite the only partial dispossession of peasant farmers, and the fact that proletarianisation has not been completed and often takes a disguised or misplaced form (share cropping, contract farming, off-farm employment, urbanisation).

Although the rural exodus in the 1960s was facilitated by the state, the crisis and industrial decline since the mid-1970s have forced Greek governments into a support policy for the survival and maintenance of agricultural populations in the countryside. The CAP has promoted a similar policy on a European level up until the mid-1980s. Recently, however, a new economic and political environment has set the ground for agricultural restructuring and development. The protracted international crisis, the increasing competition, the spread of neo-liberal ideology, and the increasing liberalisation of trade since the late 1980s (GATT Agreement, CAP reform, etc.) have gradually led to the formation of a new agricultural strategy on the European level. This new strategy, aiming at drastic restructuring, at concentration and consolidation of capital in agriculture, at intensification of technological modernisation, and at increased competitiveness, has informed and, in fact, overwhelmingly determined the major agricultural policy orientations of Greek governments. The Greek state has, on this occasion, functioned not simply as a conveyor belt, but in clear support of large interests involved in the agricultural sector. The new strategy for agricultural restructuring has been expressed through a series of major policy measures (agricultural taxation and social security, the Farming Register, the 'Kapodistrias' project, and the drafting of a new law for co-operatives and for a 'Land Management Bank'). This new strategy and the specific measures it entails tend to reinforce further the process of class polarisation and capitalist development in Greek agriculture⁷. Combined with austerity and adjustment policies in the process of the EMU of the EU, this punch for modernisation has already had a devastating impact in the countryside, tending in particular to eliminate thousands of small and inefficient producers. Thus, it tends to de-legitimise the state and EU policy, and threatens to shatter the social basis and alliances on which the influential populism of PASOK has developed.

Some authors have already offered a satisfactory critique of neo-populism and an accurate assessment of the role played by the traditional Left in the recent agrarian mobilisations (Louloudis and Maraveyas 1997). By attributing these mobilisations, however, to an insufficient modernisation of Greek agriculture, or to the large interests consolidated, especially in the region of Thessaly, through the CAP subsidisation of cotton production, they are trapped in the cleavage between neo-populism and modernisation. At variance with this interpretation, I argue that the protracted and dynamic mobilisations in the period 1995-99, as well as their massive appeal, can be adequately interpreted only as a result of the class-differentiating impact of capitalist modernisation, and of the devastating impact of the new strategy for agricultural restructuring and modernisation. It should be clear, by now, that it is the increasing *capitalist modernisation* of agriculture, not the lack of it, and not so much the CAP regulation (subsidies, etc.), which leads to an increasing displacement and degradation of labour (proletarianisation, inadequate education and nourishment of poor farmers, intensification, deskilling), as well as to the increasing degradation of the natural and social environment in the countryside.

Although the agrarian mobilisations have been largely misguided by the existing inter-class farmers' unions, a related corporatist approach, and the influential neo-populist ideology, these mobilisations have made it increasingly clear that the so far

mute process of class formation in the agricultural sector seeks a more definite political expression, and that the emerging 'working class' in this sector seeks to make its struggle as a class-for-itself more effective. It has also become clear that, both now and in the struggles of the immediate future, this emerging agrarian proletariat will have to confront, on the ideological level, both neo-populism and capitalist modernisation, and on the economic and political level, not only the emerging and increasingly consolidated rural bourgeoisie, but also industrial capital, whether domestic or foreign. From the standpoint of the emerging new 'working class', it becomes increasingly clear that a new strategy is urgently required, which would reject both neo-populist undifferentiated 'pro-agricultural' support, the illusion of a long term future for small farmers, and the proletarianising impact of capitalist modernisation (see Banaji 1990). A strategy which would instead promote the alliance with the urban working class, and conceive the potential resolution of the agrarian question only within the context of social transformation and as an inextricably related part of the social question.

Notes

- ¹ For a critique of neo-populism see Patnaik (1979), Brass (1997), Liidakis (1999).
- ² This limitation also applies largely to the international Marxist literature, which usually focuses on the social differentiating impact of technical change. For a critique of technological determinism, and a dialectical approach to technical change in agriculture, see Liidakis (1997).
- ³ Apart from Patnaik's relevant research for India (1987), da Silva (1984) has also used the net hired labour index and discriminant classification analysis to conclude that capitalism in North-Eastern Brazilian agriculture is relatively high and not limited to the 'indirect' dominance of capital through the sphere of circulation. His results show that 'agrarian capitalists make up 34.9 per cent of the landowning homestead population'.
- ⁴ This struggle, which also entails the competitive conflicts between the different sections of the agro-food industry, is usually mediated by the state, and concerns fundamentally the overall production and distribution of surplus value.
- ⁵ This marginalisation of the less productive rural regions should not be understood only in relation to the more developed and productive regions of the country. It is also increasingly determined within the context of the evolving international division of labour, and is reinforced insofar as the country's total imports of food and agricultural products tend to surpass the relevant exports.
- ⁶ We could here report two cases exemplifying this increased risk. The first concerns the extensive economic damage suffered and the potential ruin faced by many farmers in the Messara valley of Crete in summer 1997 as a result of a failure in melon production, due to inappropriate imported seed. The second relates to the extensive soil contamination and the failure in production, caused by a bacterium associated with the potato seed used in the plateau of Lassithi in the Autumn of the same year. In both cases, cultivators have in vain expected some protection from the state or its extension services. They would also in vain expect any clear responsibilities or a well-organised institutional framework for the production of genetic material and its supply to the farmers at a reasonable cost.
- ⁷ These policy measures and the processes put into effect are moreover strengthened by the main directives of the so-called 'Agenda 2000' of the EU.

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