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RESEARCH PAPER

# The triumph of neoliberalism and the world dominance of capitalism

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*Neoclassical economics dominates modern economics and provides an important theoretical basis for neoliberalism. Among its inadequacies are failure to take sufficient account either of technological change or of marketing activities, both of which are central features of modern capitalism. Neoliberals believe that the state should be confined to safeguarding individual and commercial liberty and strong property rights. But in practice, corporations' dependence on states has been pervasive for at least 100 years. Corporations aim to secure higher profits. They lobby international organizations, as well as states, both to create conditions more favourable to their own individual interests, and also to increase the proportion of economies in which private corporations are allowed to operate. This may apply, for example, to privatization of health and education services which is not always in the public interest. This paper outlines several examples of interactions among corporations, technological change, marketing, state support and international organizations. Examples include huge state support for road construction, which facilitated the domination of cars over land transport; the role of marketing and technological change in the food and agricultural industries; and state support for scientific and technological change in semiconductors and the Internet, and for the development of biotechnology. In conclusion, the paper suggests an alternative approach to studying the dynamics of the modern world economy, viewing it as complex networks of interlocking systems. This might produce more useful analyses than those based on obsolete theories.*

## Introduction

> I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas … soon or late, it is ideas, not vested interests, which are dangerous for good and evil. (Keynes, 1954, pp.383–84)

The central contention of this paper is that in the three-quarters of a century since John Maynard Keynes published his *General Theory*, Keynes' dichotomy between ideas and vested interests has turned out to be almost entirely false. This is because the greatest ever conglomeration of vested interests – world capitalism – has achieved hegemony over both the world economic system and the world of economic ideas through extensive public acceptance of the ideology of neoliberalism.

This paper is designed to stimulate analysis, discussion and debate related to the hypothesis that huge multinational corporations exercise disproportionate influence on the direction of the world economy. In contrast, the analyses presented and

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promoted by most neoclassical and neoliberal economists lead to the broad conclusion that Adam Smith's 'invisible hand' still drives the world economy in directions which, in due course, benefit the majority of the world's population. Some leading neoclassical economists are prepared, in effect, to concede that their theories do not yet succeed in explaining all economic phenomena and developments. But neoliberals perceive no serious defects in the operation of markets, and attribute responsibility for the vast majority of defects in the operation of the world economy to government interference. A high proportion of policymakers have absorbed neoliberal ideas as a basis for their economic policies, and in consequence offer excessive support for the policies and operations of multinational corporations.

The paper identifies some of the deficiencies of neoliberalism and its adverse consequences, especially for poor people. It outlines the nature, development and history of neoliberalism and its growing influence on decision-making throughout the world. It begins to articulate some of the limitations of neoclassical economics and neoliberal thought in explaining the development of modern economies. It then gives some indications of why neoliberalism's influence is often harmful to the interests of the majority of the world's population. The paper focuses on the broad directions in which capitalist economies develop; and in particular on how the use of technologies develops and changes.

## What is neoliberalism?

There are somewhat different views about the nature of neoliberalism, but its fundamental nature is not seriously disputed. For example, according to Harvey (2005, p.2):

> Neoliberalism is in the first instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices. The state has to guarantee, for example, the quality and integrity of money. It must also set up those military, defence, police and legal structures and functions required to secure private property rights and to guarantee, by force if need be, the proper functioning of markets. Furthermore, if markets do not exist (in areas such as land, water, education, health care, social security, or environmental pollution) then they must be created, by state action if necessary. But beyond these tasks the state should not venture. State interventions in markets (once created) must be kept to a bare minimum because, according to the theory, the state cannot possibly possess enough information to second-guess market signals (prices) and because powerful interest groups will inevitably distort and bias state interventions (particularly in democracies) for their own benefit.

Thorsen (2010, p.203) suggests that Harvey's definition is unduly pejorative and that neoliberalism is best seen 'as a loosely demarcated set of beliefs'. Perceiving it as a theory might imply that neoliberalism is more coherent than it actually is. But Thorsen does not disagree fundamentally about the nature of neoliberalism. He agrees with Harvey that neoliberals believe that the state should confine itself to safeguarding individual and commercial liberty and strong property rights; that market mechanisms are the best way to organize all transactions involving goods and services; that free markets and free trade liberate the creative, entrepreneurial spirit which exists in

human society; and that this freedom can lead to greater well-being and better allocation of resources (Thorsen, 2010, p.204).

## The origins of neoliberalism

The ideas which eventually developed into neoliberalism were expounded by Adam Smith in *An Inquiry into the Nature and Causes of the Wealth of Nations*, published in 1776. The fundamentals of pro-capitalist ideology and the predominant strands of orthodox economic theory have remained essentially unchanged for about 300 years. They can be summarized as a belief in the benefits of economic growth for all humankind, together with beliefs in the benefits from applying the principles of the division of labour articulated by Smith, together with the potential benefits of markets in which suppliers compete with each other to meet the needs of consumers. An 'invisible hand' ensures that each supplier striving for his own advantage benefits society (Smith, 1910, p.400).

Neoliberalism was created by the Mont Pelerin Society, which first met in 1947. This group included Friedrich von Hayek, Ludwig von Mises and Milton Friedman. They believed that their commitment to ideals of personal freedom entitled them to claim to be 'liberal'. They thought that individuals and voluntary groups had been undermined by extensions of arbitrary power, and that such developments had been fostered by a decline in belief in private property and competitive markets. They were committed to the free market principles of neoclassical economics, which had replaced classical economics, and had been developed by Adam Smith and his successors (Harvey, 2005, pp.19–20). Unlike mainstream orthodox, neoclassical economists, neoliberals do not believe in *laissez faire*. Neoliberals believe in the need for a strong state to foster and sustain a stable market society. But neither neoclassical economists nor neoliberals have arrived at any consensus about what precisely this means (Mirowski, 2013, pp.53–55).

## A myth at the heart of neoliberalism

One of the central tenets of neoliberalism is the need to protect markets from interference by states. But, in practice, capitalism's survival and continued prosperity is dependent on massive continual injections of state financial aid (Stiglitz, 2012, pp.48–51). Neoliberalism incorporates beliefs about the beneficial workings of competition in decentralizing economic decisions in a mythical world free of government intervention. For example, Hayek (1944, p.36) suggests:

> Because all the details of the changes constantly affecting the conditions of demand and supply of the different commodities can never be fully known or quickly enough be collected and disseminated, by any one centre, what is required is some apparatus of registration which automatically records all the relevant effects of individual actions, and whose indications are at the same time the resultant of, and the guide for, all the individual decisions.
>
> This is precisely what the price system does under competition, and which no other system even promises to accomplish. It enables entrepreneurs by watching the movement of comparatively few prices, as an engineer watches the hands of a few dials, to adjust their activities to those of their fellows.

Hayek (1944, p.37) goes on to contrast 'decentralisation plus automatic co-ordination' with central direction, which he states is 'incredibly clumsy, primitive, and limited in scope'. The dichotomy is fundamental to this seminal neoliberal text. But it is not very relevant to the modern capitalist world in which the role of government is pervasive, but does not include central direction. Numerous examples of this pervasive influence are outlined here and throughout this paper.

Rapid growth of several enormous privately-owned industries in the United States and worldwide was made possible by government expenditure (Mazzucato, 2011, p.73). As in most other countries, public expenditure on roads in the United States is enormous – far exceeding public subsidies to railways. In the United States, public subsidies to the airlines are also huge (Grescoe, 2012, p.264). The massive expansion in car manufacture and use was not driven entirely by market demand. In the United States, car manufacturers and producers of complementary products, such as tyres and petroleum, wanted to sell cars, so they conspired together illegally to undermine public transport systems, such as electrified tram systems (Dennis and Urry, 2009, pp.35–36). The Interstate Highway Act was passed in 1956 and led to expenditure of US$130 billion of government money to build 46,000 miles of road. This in turn led to the opening of the first fast food restaurants (on the ramps to California's new freeways) and resulted in the rapid expansion of the fast food industry (Schlosser, 2002, pp.21–22).

The expansion of car use worldwide has had huge effects on the development of cities: old cities had to be adapted to cope with far greater traffic volume than was conceivable when they were first built; and newer cities had to be designed with patterns of development and land use determined largely by the requirements of car-dominated transport (Safdie, 1997, pp.5–6). Excessive use of cars and inadequate public transport in cities, especially in developing countries, results in heavy pollution and enormous numbers of people killed on the roads (Davis, 2007, pp.19 and 133).

Also in the United States, government-sponsored research and agricultural extension services contributed to increases in agricultural productivity, and subsequent funding by government allowed the creation of both the information technology and the biotechnology industries (Stiglitz, 2012, p.93). During the Clinton administration, huge subsidies to both agriculture and energy companies persisted. During the 2008 crisis, one corporation (AIG), received more than US$150 billion as bail out from the US government – 'more than was spent on welfare to the poor from 1990 to 2006' (Stiglitz, 2012, p.180). The United States government has funded the Defense Advanced Research Projects Agency (DARPA), which has sponsored basic science, acted as a catalyst for the co-operation of public agencies, private corporations and venture capitalists; and facilitated commercialization (Mazzucato, 2011, p.74). For example, in the 1960s, DARPA accelerated semiconductor development by establishing computer science departments at universities; in the 1970s, it funded a laboratory which accelerated the development of computer chip fabrication technology (Mazzucato, 2011, p.77).

## Some serious inadequacies in neoclassical economic theories

Orthodox neoclassical economic theory, on which neoliberalism is based, claims that just as what is paid for goods is determined by the forces of supply and demand, so workers' pay is more or less what they are worth: the pay people receive is related to their 'marginal productivity', their contribution to the productivity of the

economic activity in which they are participating (Routh, 1989, pp.266–69). Routh's earlier analysis of empirical evidence, such as that summarized briefly below, indicates the severe limitations of marginal productivity theory. For example, the British experience after the Second World War indicates that it is possible to secure sufficient people with the skills required for any occupation which offers above average pay and conditions by subsidizing the education and training necessary to enter the occupation. After the Second World War, public education in Britain prepared a larger proportion of the population for higher paid occupations. Between 1935 and 1955, higher professional pay fell from 395% to 269% of the all-class average, and lower professional pay from 188% to 114%. But during the same period, there was a substantial increase in the numbers of full-time university students receiving public grants. Also during this period, teachers suffered a substantial reduction in their relative pay. Yet it proved possible first to compensate for the wartime fall in the number of teachers, and then to increase their numbers by more than 20% between 1949 and 1956. By 1955, there were more qualified applicants than places at colleges for training teachers (Routh, 1980, p.194). These examples are only a very few of the many which Routh gives to demonstrate that the pay people receive is related to a range of factors beyond their contribution to productivity as postulated by neoclassical economics.

More recently, some eminent orthodox neoclassical economists, while not explicitly rejecting orthodox marginal productivity theory, have found that they cannot rely on it exclusively. Like Routh, they need to use alternative approaches in attempting to understand and explain contemporary economic developments. Prominent amongst these are Paul Krugman, Joseph Stiglitz and Thomas Piketty. Krugman (2009, pp.131–52) analyses the reasons for the enormous increases in the financial rewards received by the highest earning 0.01% of the American workforce – the 'superelite' – since the 1970s. The superelite consists mainly of sports and entertainment celebrities, and top executives at major companies. Krugman offers an explanation, based largely on conventional orthodox economics, that 'rising inequality is mainly caused by a rising demand for skilled labour, which in turn is driven largely by technological change' (Krugman, 2009, p.131). Similarly, Stiglitz notes that skill-biased technological change has been significant in shaping the labour market – increasing the pay of workers with skills, deskilling and eliminating others (Stiglitz, 2012, p.56).

But Krugman, Stiglitz and Piketty cannot rely on orthodox economics for adequate explanation of the growth in recent years of superelite pay. Krugman (2009, p.141) thinks there is 'a strong circumstantial case for believing that institutions and norms … are the big sources of rising inequality in the United States'. An example of changing institutions is the collapse of the US trade union movement, and a prominent example of changing norms is the runaway growth of executive pay. He suggests that 'it's not hard to see why executive pay is a lot less tied down by fundamental forces of supply and demand, and a lot more subject to changes in social norms and political power' (Krugman, 2009, p.143). And, in the 1980s and 1990s, non-economic factors, such as weaker unions and changes in norms of fairness, enabled management to take bigger slices of corporate revenue (Stiglitz, 2012, pp.66–67). Similarly, Piketty (2014, p.308) points out that marginal productivity 'fails to explain the diversity of the wage distributions we observe in different countries at different times … the labor market … is a social construct based on specific rules and compromises'.

Further, through their huge buying power, large corporations, whether engaged in raw material extraction, agricultural production and distribution, manufacturing or service production, are in a position to exert very considerable downward pressure on the pay and conditions of the workers they employ. This pressure can, in principle, be resisted by workers organized into trades unions, and by government regulation, itself stimulated by organized labour. But the power of corporations to exert such pressures has increased substantially in recent years as a consequence of their growing ability to move their operations across the world from locations where they are confronted by highly-paid, well-organized workers to places where they can dominate and control poorly-paid, badly-organized workers (Stiglitz, 2012, pp.61–62).

The low wages paid to hundreds of millions of workers in the developing world for work in, for example, food production and mineral extraction, is a major cause of world poverty. These low wages are not the consequences of free competition to buy labour by large numbers of employers, as assumed in orthodox economic theory. Rather, they are the consequences of the exertion of monopolistic buying power by large corporations, each of which controls markets in particular industries in specific geographic areas, and each of which enjoys monopolistic powers in product markets (Lines, 2008, pp.96–112). For example, the wages received by gold miners working for large corporations in dangerous, unhealthy conditions are tiny compared with the prices received by corporations for the gold they mine. Artisanal migrant miners, working in small mines, make up a very large proportion of the world's gold mining workforce; they receive even lower wages and work in far more dangerous conditions. Such gold miners in Ghana receive about 18% of the price paid for gold on world markets (Sharpe, 2013, p.40).

Neoclassical economists suggest that competition among producers ensures that consumers benefit from intense competition among suppliers to meet their needs and desires. Neoclassical economic theory would indicate similarly that workers should benefit from competition among employers (in terms of wages and conditions) to secure their services. But just as monopolistic buyers are often successful in driving down the wages of those who supply them with the products they market, they frequently attract workers to work in unhealthy, unsafe conditions because those workers have no better work available to them.

Just two very different examples are given here: gold mining (Sharpe, 2013, pp.39–43) and slaughterhouse workers (Cudworth, 2013, pp.51–53). Artisanal miners use mercury to extract the gold from the ore. This leads to systemic mercury poisoning. Mercury enters the water supply, affecting both miners and their dependents – perhaps as many as a hundred million of them. Mercury is a very toxic metal. Its vapour persists in the atmosphere for about a year. Inhalation of mercury vapour can damage a developing foetus. It targets the kidneys of both adults and children, and can cause acute corrosive bronchitis, lung disease and central nervous system defects, including tremor, excitability, memory loss and insomnia (Klaasen, 2008, pp.947–50). Cudworth shows that the animal food industry has embedded intensive production systems worldwide, operated by badly-paid employees working in poor, sometimes appalling, conditions (Cudworth, 2013, pp.47–60; see also Schlosser, 2002, pp.169–90):

> Slaughterhouse and meat packing workers are poorly paid for long hours and for tedious, dirty, repetitive work using dangerous tools. They often work in excessively

> hot or cold temperatures and sustain injuries from animals, other workers and their own errors in a pressurized environment in which speed is of the essence. (Cudworth, 2013, p.52)

Just as notable as the failure of mainstream neoclassical economists to explain the wages that workers receive is the neglect of technological change in their analyses. This is despite the fact that, over the last 100 years, technological change has become more rapid, and its economic effects more profound and more pervasive everywhere. Schumpeter (1954, p.67) makes clear that the engine of economic growth in capitalism is competition among capitalists based on innovations in products and production processes, rather than price competition:

> The capitalist engine is first and last an engine of mass production which unavoidably means also production for the masses … It is the cheap cloth, the cheap cotton and rayon fabric, boots, motorcars and so on that are the typical achievements of capitalist production. The capitalist achievement does not typically consist in providing more silk stockings for queens but in bringing them within the reach of factory girls in return for steadily decreasing amounts of effort.

Schumpeter (1954, p.68) goes on to point out that continual revolution in production methods and in product available result in 'an avalanche of consumer goods … the capitalist process … by virtue of its mechanism, progressively raises the standard of life of the masses'. The assumption fundamental to neoclassical economics that consumers would choose the products to buy from those offered in markets on the basis of price had become obsolete.

According to Stiglitz, mainstream economics is also wrong in its assumption that people know what they want. He asks why corporations would spend huge amounts of money trying to persuade consumers to buy their products if they believe that people know what they want (Stiglitz, 2012, pp.146–47). In addition to advertising to consumers to persuade them to buy products, corporations also lobby governments and international organizations to secure taxation regimes and regulatory environments favourable to business. The neglect of systematic consideration of the effects of enormous effort and expenditure on marketing, advertising, promotion and lobbying surely renders neoclassical economic theories and neoliberalism invalid.

## Neoliberal and corporate influence on policies and communications

Mirowski has reviewed the current world dominance of neoliberal thought processes. This dominance has persisted, despite neoliberals' manifold failures to explain major economic phenomena, such as the financial crisis which started in 2007 (Mirowski, 2013). Mirowski insists: 'Neoliberal initiatives and policies still carry the day' and 'neoliberalism as worldview has sunk its roots deep into everyday life' (Mirowski, 2013, p.28). Neoliberalism has 'pervasive effects on ways of thought to the point where it has become incorporated into the common-sense way many of us interpret, live in, and understand the world' (Harvey, 2005, p.3). It is 'acted upon within most corporations, many universities, most state bodies and especially international organizations' (Dennis and Urry, 2009, p.140).

In accordance with neoliberal precepts, the information society should be created by the private sector and the power of technology, and by the deregulation of markets and reduction of state intervention. The dominance of neoliberal thought

processes has manifested itself in terms of deregulation, privatization and reduction in state participation in social provision. Such changes have taken place in social democracies, such as those in Scandinavia, and in the new states arising from the collapse of the Soviet Union (Harvey, 2005, p.3), as well as in the European Union and the United States. In the 1990s, the United States and the European Union were confronted with the need to respond to very important changes in the economic structure of advanced capitalist economies. Manufacturing employment had declined and service sector employment had increased. Several new neoliberal concepts, such as the 'service economy', the 'post-industrial society', the 'information society', the 'information age' and the 'knowledge economy', were developed and applied to policy in Europe and the United States (de Miranda, 2009, p.26). The Bangemann Report (European Council, 1994) was adopted as policy by the European Union in 1994. It called for the creation of the information society, which would be a better, more free, more prosperous sort of society. At the same time, the kindred concept of the 'information age' became the basis for United States government policy (European Council, 1994; de Miranda, 2009, pp.27–28).

Moreover, since the development of broadcasting, the drive to advertise and promote goods and services has been accompanied by massive growth of electronic communications worldwide. The cultural content of broadcasting has been driven by advertising. In the United States, by 1957, television had followed radio to become 'the creature, the servant, and indeed the prostitute of merchandising' (Wu, 2010, pp.155–56 citing Walter Lippmann). For example, fast food chains in the United States spend something like US$3 billion per annum on television advertising. In addition, they enter into numerous marketing alliances specially designed to promote often unhealthy products to children (Schlosser, 2002, pp.47–49).

Technologies involving interactivity between television broadcasters and their audiences have been available for some time. It would have been possible to develop such technologies with the aim of democratizing broadcasting; for example, by empowering viewers to engage actively with programme makers. But commercial interests dominate television broadcasting worldwide. The central aims of broadcasting organizations include converting viewers into customers, targeting elusive audiences, cutting production costs and maximizing revenue streams. 'Rather than empowerment, an illusion of participation through interactivity is being used to underpin an increasingly voyeuristic mode of television' (Walker, 2009, p.111).

Like so many important innovations, the Internet owes its origins to initiatives and expenditure by the United States government, having been created initially by the military as a communication tool. It was originated by academics working in the US Defense Department's Advanced Research Projects Agency Network (ARPANET), which connected university and government computers (Wu, 2010, p.197). By 2010, it was beginning to be used in several applications, including phone calls, video, television and data transmission (Wu, 2010, pp.256 and 215). The Internet, followed by the Worldwide Web, then became valuable for business. The Internet added substantially to the opportunities provided by the telephone in terms of one-to-many communications, and to the opportunities afforded by the press, radio and television broadcasting in terms of one-to-many communications and advertising. And social media provided a powerful tool for many-to-many communication (Newlands, 2013, p.156). This all represents fulfilment of 'capital's dream of superfast networks that will spread consumerism across the planet' (Notes from Nowhere, 2003, p.65).

> No marketing campaign for a fast moving consumer good today is complete without its social media segment. Old-fashioned page, TV and poster advertising will be in the mix but there will also be an attempt to create a 'viral campaign' through social media. (Sharpe, 2012, p.5)

Without advertising, we might never know we needed processed cereal and revert to porridge or bread instead (Lawrence, 2008, p.20). Similarly, 'Corporations use recent advances in psychology and economics that extend our understanding of how preferences and beliefs can be shaped to induce people to buy their products' (Stiglitz, 2012, p.147). Castells provides useful insights about media impact on people's perceptions, which are particularly relevant to social media. He notes that processes of communication depend on interactions between senders and receivers. These are much stronger in social media than in conventional mass media; 'the fact that the audience is not a passive object but an interactive subject opened the way to its differentiation, and the subsequent transformation of the media from mass communication to segmentation, customization and individualization' (Castells, 1996, pp.336–37).

Of course, the Internet and mobile phones can be very valuable to society in many ways, including giving many poor people in remote areas new access to services and information. Poor farmers, for example, can gain far better knowledge of markets, prices and weather conditions (Sharpe, 2013, p.33). But Morozov (2011, pp.288–89) suggests that the best way to understand the social implications of the Internet is to analyse the non-technological forces in its environment. As the most prominent feature of the Internet environment is the search for profits by large corporations, expressed principally in its domination by pervasive advertising, this may be the place to start in studying the Internet's economic significance.

## Corporate influence in economic development

In a short paper, it is possible only to give a few brief examples of the influence exerted by multinational corporations on the direction of economic development and technological change. If there is any validity in the hypothesis underlying this paper, that huge multinational corporations exercise disproportionate influences on the direction of the world economy, this would indicate that democratic influence on economic policy is severely restricted, even in countries generally recognized as democratic. This is surely a matter of serious concern to everybody who believes that democracy should be a leading principle of governance throughout the world. Some huge multinational corporations exercise undue influence on the direction in which the world economy develops through operating under the jurisdictions of several states. So they can play states off against each other and thereby influence taxation and employment policies. Because nation states compete with each other to attract and retain multinational corporations, their willingness and ability to co-ordinate economic and taxation policies are severely restricted. These corporations are concerned with their own profits and not with the welfare of poor people.

Corporate strategy is commonly to increase the proportion of government expenditure received by the private sector (Chadderton, 2013, p.140). Neoliberal ideology contends that private provision of goods and services is invariably more efficient than public provision. Areas where this ideology is especially contestable include provision of health services and water (Feldman, 2012, pp.94–106). In

healthcare (Senker, 2013b, p.85) and education (Malatesta, 2013, pp.99–100), the US government and international organizations have exerted strong influences in favour of private delivery, disregarding the interests of poor people in developing countries. The World Trade Organization (WTO) believes that public services, such as education, should be opened up to international capital, and that this would benefit both globalization and education. But further opening of the markets of poor nations to transnational corporations is liable to create even greater inequality between rich and poor nations (Malatesta, 2013, p.94).

The World Bank argues that information and communications technologies (ICTs) can be an engine of growth for developing countries, offering them unprecedented opportunities to enhance their education systems: ICTs, it is claimed, offer the means of narrowing the gap in productivity between developing and industrialized countries. But there is little evidence for such propositions. The prevailing evidence suggests that, as a consequence of the cumulative nature of learning processes, developing countries are in a comparatively poor position to exploit the potential of ICTs, and, accordingly, that inequalities are likely to become even more entrenched (Mukasa, 2013, p.76). The potential of mobile phones in education in developing countries (mlearning) has been greatly exaggerated by manufacturers keen to expand their sales. The costs of connection, strength of signal and small screen make it exceedingly unlikely that they could be used to provide high quality education. The education provided has been learning by rote. Electronic learning (elearning) can have a part to play in education in developing countries, but when suppliers of the latest technology, whether mobile phones or the Internet, drive educational change, they do not drive it in directions which fit the individual circumstances of countries and regions. Indeed, in some circumstances, an old technology, such as radio, may offer more appropriate education (Malatesta, 2013, pp.100–4).

The influence of modern capitalism is evident in worldwide agricultural and food production, promotion, and distribution. Green Revolution was supposed to increase food production and food security in developing countries, but it was initiated as a co-ordinated effort of the US government and major corporations and foundations as an integral part of Cold War strategy. It was designed to help secure domination by US corporations of developing country agriculture, including supply of such inputs as fertilizers, pesticides and seeds (George, 1976, pp.79–92). Its results in terms of the welfare of poor people in developing countries have been mixed. For example, the Green Revolution certainly did help to feed people in fast-growing Indian cities, but improvement in the nutrition of the poorest third of the population has been very small (Thompson *et al.,* 2007, p.23). In India, and elsewhere, these agricultural developments were strongly opposed by massive movements of peasants and small farmers (Patel, 2007, p.124; Branford, 2011, p.27).

Less than 60% of the world's population consumes an adequate amount and quality of food to maintain health. About 28% consumes too little food and 15% consumes too much, suffering from such chronic conditions as type 2 diabetes and cardiovascular disease (Foresight, 2011, pp.9–10). Obesity is significant in causing such conditions. Obesity is not caused solely by fast food consumption, but fast food consumption is one of its causes. Fast food consumption has risen rapidly in the United States, and obesity is growing as a cause of morbidity and death. Britain consumes more fast food than any other Western European nation and obesity is rising. Similarly, rapid increases in fast food consumption in China and Japan have resulted in rising obesity there (Schlosser, 2002, pp.241–42).

At the same time, there are still huge numbers of people suffering from severe deprivation, from hunger, starvation and poor health. These include people who possess insufficient land on which to grow sufficient food for themselves and their families, and also unemployed people who cannot afford to buy enough food (Senker, 2013a, pp.105–6). Hunger in terms of lack of access to sufficient of the major macronutrients – carbohydrates, fats and proteins – afflicts nearly a billion people. Perhaps another billion suffer from 'hidden hunger', resulting from inadequate micronutrients, such as vitamins and minerals. This brings risks of physical and mental impairment (Foresight, 2011, p.9).

Powerful corporations 'are using massive advertising campaigns to change eating habits so that target populations consume more of the foods that they control, particularly processed food with its heavy use of wheat and soya' (Branford, 2011, p.26). A century ago, simple cereal grains cooked as either porridge or bread were the staples of breakfast throughout the world. Manufactured, packaged, ready-to-eat breakfast cereals – puffed, flavoured, salted and extruded – began to be developed in the United States in the first half of the nineteenth century as one of the earliest convenience foods:

> They are the epitome of cheap commodity converted by manufacturing to higher value goods; of agricultural surplus turned into profitable export. Somehow they have wormed into our confused consciousness as intrinsically healthy when by and large they are degraded foods that have to have any goodness artificially restored. (Lawrence, 2008, p.5)

In general, it seems that agricultural production and the distribution of food are not closely linked to people's food needs. Genetic modification (GM) illustrates this nicely. The principal organizations which deploy R&D to develop and apply GM to agriculture are large multinational corporations based in rich countries. They deploy GM principally to meet the demand from food processors and farmers in developed countries. Corporations develop and market standard capital intensive solutions for major commodity crops, such as maize, cotton, rice and soya bean, believed to offer large, secure markets (Senker and Chataway, 2009, pp.172–76). Controversy has surrounded the planting of these crops, criticized as being dangerous to the environment (Senker and Chataway, 2009, p.180).

Major pharmaceutical corporations concentrate on meeting needs in advanced countries because they believe that these markets offer the best opportunities for profit. The principal causes of illness and death in developed countries are cancer and diseases of respiratory, cardiovascular and nervous systems. So there is an inbuilt tendency arising from market forces for pharmaceutical corporations to concentrate on treating these diseases (Senker, 2013b, p.78). The pharmaceutical industry has received major stimuli from government funding. For example, legislation in the United States gave important tax incentives which enabled firms to develop and market drugs based on biotechnology, and encouraged firms to share proprietary knowledge. The role of government has been critical to such firms' success (Mazzucato, 2011, pp.80–82).

In contrast to the situation in developed countries, communicable diseases are the main health problem in developing countries. Principal causes of death are respiratory infections, HIV/AIDS, infections at birth, diarrhoeal disease, a major killer, especially of children, and such tropical diseases as malaria (Parliamentary Office of

Science and Technology, 2005, p.1). Enormous sums are spent on finding treatments for the diseases from which people in rich countries suffer. In comparison, the expenditure on developing treatments for the diseases from which people in developing countries suffer is tiny. In addition, many fatal diseases in developing countries could be prevented by public health measures, investments in basic health and in provision of safe drinking water and sanitation (Sachs, 2005, pp.233–34). There are numerous technologies which could offer more effective treatment for the diseases of developing countries, but insufficient resources are devoted to their development and exploitation. Even when treatments are developed in advanced countries which could help people in developing countries, the companies which market those treatments in developing countries try hard to secure the sort of prices they find in advanced countries. Poor people cannot afford such prices (Senker, 2013b, p.87).

In accordance with advice from such organizations as the World Health Organization, the World Bank and the US National Institute of Health, several developing countries, particularly in Latin America, have privatized their health services. Privatization has usually improved conditions for private organizations, but has not generally improved access to health services for vulnerable groups (Waitzkin *et al.*, 2007, pp.205–27). As a consequence of privatization, developing countries have often had to rely on NGOs, UN agencies, charities and humanitarian agencies to plug gaps in public provision (Global Health Watch, 2005, p.65).

## Discussion

For at least the past 100 years, the world economy has been developed mainly by major corporations, which control vast resources devoted to R&D, product and service design, manufacturing and marketing. Several examples have been given of how corporations have exploited the fruits of R&D. Governments have spent heavily on the basic research which supports the businesses of these corporations. The principal aim of all major corporations is to increase profits. Neoclassical economists, including the neoliberal sect, hypothesize that the operation of markets – which they never define rigorously – is generally beneficial to consumers who buy the products and services offered on markets, and to workers who sell their services in them.

This paper suggests a radically different approach to studying the workings of a modern economy, embodying the idea that the economy should be seen as a network of interlocking systems, including food and agriculture, transport, communications and education. Considering the world economy in this way allows examination of the principal forces driving the development of each system. This might provide a better basis for evaluating the effectiveness of each system in meeting the needs and desires of the world's population; and for identifying the improvements needed to increase the effectiveness of the network. In undertaking such exercises, important criteria of effectiveness could include how the directions in which each system develops affects the interests of various sections of the world population, and also the environment.

The drive for profits of major corporations propels some systems in directions which have adverse effects on poor people, particularly those in developing countries. This drive for profits has generally been successful not simply through the operation of markets, but also through the success of corporation in securing state co-operation – and often massive financial contributions – for the development of products and systems. Corporations have also been successful in achieving co-operation from

international organizations. For example, the International Monetary Fund has often included privatization among the measures it imposes on developing countries facing economic downturns. It has also often included capital market liberalization, encouraging Western financial firms to enter the capital markets of developing countries. Such measures result in economic instability rather than economic growth (Stiglitz, 2012, pp.181–82). The available evidence indicates that privatization is likely to have an adverse effect on the interests of people in those countries.

The dominant capitalist system has indeed been responsible for rapid economic growth over the past 200 years. The enormous increase in production of an ever-increasing and ever-changing range of products and services has helped to raise hundreds of millions of people out of poverty and deprivation (Cudworth *et al.*, 2013, p.167). The operation of capitalism and, in particular, of extensive networks of complex markets, has also resulted in huge numbers of consumers and businesses making billions of relatively trivial choices about which brands of products and services to buy. Mirowski (2013) and Harvey (2005) have shown, in my view conclusively, that neoliberal theories suffer from myriad internal inconsistencies. Mirowski has gone so far as to suggest that deliberate promotion of doubt over what orthodox economists really believe has actually helped the economics profession to mislead the public, at the same time as telling its supporters what they want to hear (Mirowski, 2013, p.230). Mirowski (2013) has also shown in detail how, despite their many flaws, such theories have survived, and flourished.

Directions of change in important sectors of the world economic system are unduly influenced by a few massive corporations seeking profits. These corporations are supported continually by massive injections of government money, for instance, in R&D, and bailing out the whole capitalist system when it threatens to collapse. Government support for companies is integral to the operation of the modern capitalist system, not the optional extra that could and should be discarded implied by neoliberalism. Neoclassical economic analysis is deeply flawed. Eminent orthodox economists, such as Stiglitz, Krugman and Piketty, have deviated from their orthodoxy; and have followed Routh's example by drawing on considerations outside the confines of neoclassical economics in order to explain economic behaviour in practice. But this deviation falls short of a transformation of their thinking into a basis for understanding how modern economies work; and very far indeed from a basis for understanding the directions in which modern economies develop in an environment of rapid technological change and enormous marketing effort. While all economists acknowledge that technological change plays a role in economic and social change, this is not the same as acknowledging the significance of its role (Freeman, 2000, pp.155–56).

A more realistic analysis of the operation of modern economies might start from empirical examination of how the world economy works now, from empirical study of its behaviour, especially since the beginning of the twentieth century. In contrast, modern neoclassical economics remains firmly based on theories based on how economies were perceived to work more than 200 years ago. This paper has attempted to make the case for radical reappraisal of orthodox neoclassical economics and dominant neoliberal ideology, particularly in the light of developments in technology and marketing in the last 100 years. When Adam Smith wrote, technological change was beginning to become important, but was nowhere near as pervasive in the world economy as it has since become. Mass marketing and advertising did not yet exist. In the twenty-first century, technological change and marketing surely need to be central to realistic economic analysis.

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