

FINANCIALIZATION, COMMODIFICATION AND CARBON: THE CONTRADICTIONS OF NEOLIBERAL CLIMATE POLICY

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...the exchange of commodities implies contradictory and mutually exclusive conditions. The further development of the commodity does not abolish these contradictions, but rather provides the form within which they have room to move.¹

Karl Marx, *Capital*

The contradictions of market approaches to global warming are connected in interesting ways to the contradictions of the neoliberal policy responses to economic crises that set the stage for the 2008 crash. Among these post-1970 ‘crisis fixes’, two have particular relevance to the evolution of climate policy. The first is the increasing privatization and marketization of public goods and of the state and its functions, aimed at redistributing wealth upwards to profit-challenged capital or improving the background conditions for accumulation. This has involved a rollback of health, education and welfare programmes and certain kinds of environmental, financial and social regulation, at the same time as a rollout of heterogeneous new state and inter-state mechanisms and regulations.² The latter have ranged from trade treaties and host government agreements to public-private partnerships, ‘governance’ based on cost-benefit analysis, new property rights regimes, licenses for new enclosures, laws promoting offshore tax havens and secrecy jurisdictions and relaxing capital reserve requirements, and – to cite a spectacular culminating example – the allocation of mammoth slices of state treasuries to the ‘bail-out’ of private financial institutions.

A second, overlapping development reflected in contemporary climate politics is the increased economic and political dominance of finance. Since the 1970s, a transformed and expanded financial sector has promoted new

speculation-based hedging opportunities in an uncertain post-Bretton Woods global environment. Financialization has not only channelled more wealth from poor to rich, inflated bubble after bubble, and exacerbated global imbalances. It has also accelerated business's assimilation of cheap labour, land, raw materials and public and smaller private enterprises in new regions and arenas, and, through an enormous extension of finance's traditional role of underwriting present spending with the promise of future production, stimulated demand by offering unsustainable amounts of credit to a labour force whose wages have continued to be under assault from a capital-owning class constantly on the hunt for new sources of profit.

The carbon markets operating today under the aegis of the UN, the EU, and a variety of state and non-state actors reflect, extend and deepen both of these trends. First proposed in the 1960s, pollution markets were developed by economists, 'Big Green' Washington environmental groups, business alliances, and also – tellingly – traders with a background in financial engineering, such as the Chicago Board of Trade's Richard Sandor, the 'father of financial futures'. They then underwent a series of failed policy experiments in the US before being inserted into the country's sulphur dioxide control programme in the 1990s as a business-friendly alternative to more direct regulatory control of polluting technologies. Then, in 1997, the Bill Clinton regime successfully demanded that the Kyoto Protocol – the outcome of many years of public pressure regarding climate change – be converted into a set of carbon trading instruments (Al Gore, who carried the US ultimatum to Kyoto, later became a carbon market player himself). In the 2000s, following the US's about-face on the Protocol, Europe picked up the initiative to become the host of what is today the world's largest carbon market, the EU Emissions Trading Scheme (EU ETS). The project of building liquid global carbon markets worth hundreds of billions of dollars remains the default international approach to the climate crisis. These markets grew rapidly until 2008, when, according to the World Bank, they amounted to US\$135 billion, although they have stumbled since, following the financial crash, the 2010 failure of the US Congress to pass proposed carbon trading legislation, uncertainty about the future of UN climate treaties, and a recent spate of criminal and other scandals.³

CARBON MARKETS AND FINANCIALIZATION

The development of carbon markets shares many parallels with or links to the markets for financial derivatives that emerged in the 1970s and 1980s and surged into prominence in the 1990s and 2000s. Derivatives and carbon markets, for one thing, are both underpinned by an especially close state-

corporate relationship. The intangible commodities that both markets trade in depend for their existence on regulation; conversely, in both markets the state is highly dependent on the private sector for its understanding of how the relevant trades work. The explosive growth of trade in complex derivatives owes a great deal to legislation that removes interest rate caps; allows banks to use derivatives to offload loan risk and extend more credit on the same capital reserves; removes the divide between ordinary commercial banking and speculative investment banking; makes limited liability partnerships possible; accepts banks' own mathematical models as a way of calculating risk; and exempts derivatives from gambling laws. The state, in turn, is highly dependent on private sector judgements (from ratings agencies as well as bankers) about how products should be regulated, and highly vulnerable to private sector lobbying regarding commodity design. In carbon markets, conventional divisions between market and regulation simply disappear. As explained in the following section of this essay, carbon commodities are created by governments imposing overall limits on pollution and promulgating and enforcing – with private sector assistance – a multitude of emissions 'equivalences'.

Carbon markets also display the same extreme dependence of regulators on the opinions of business figures profiting from the trade. Corporations collect huge amounts of rent merely by lobbying government regulators for grants of pollution rights and providing them with the 'expertise' and information they lack – for example, yearly emissions estimates or new emissions 'equivalences'. The International Emissions Trading Association (IETA), a group of 176 transnational financial, law, energy and manufacturing corporations headed by a former British civil servant, is highly influential in developing the carbon commodity in ways that would make trading in it more profitable to the financial sector (some IETA members make money, for example, by inducing price volatility), while also promoting increased use of emissions 'equivalences', sweeping standardization of climate commodities, rubber-stamp regulation, banking and borrowing of carbon pollution credits across compliance periods, increased participation of financial intermediaries, no buyer liability for fake products and an unregulated over-the-counter market that would encourage speculation. Moreover, because many regulators are themselves buyers or sellers of carbon pollution credits, and because both buyers and sellers, whether they are from the public or private sectors, have financial or professional interests in creating as many credits as possible, there is little incentive on any side to inquire too closely into the nature and robustness of the commodity.

The distinction between public servants and private profiteers in either

market is often little more than a date on a résumé. Just as Goldman Sachs derivatives traders Robert Rubin and Hank Paulson both pushed for regulation promoting the expansion of derivatives markets when they became Treasury Secretaries in the US government, so Christiana Figueres, as Executive Secretary of the UN Framework Convention on Climate Change (a.k.a. head regulator of the Kyoto Protocol carbon market), merely continues the carbon market work she earlier pursued in the private sector at firms such as Endesa Latinoamerica and the Carbon Rating Agency, a company applying credit rating expertise to carbon assets. Ken Newcombe, another leading figure, has moved smoothly from the World Bank's Prototype Carbon Fund to Climate Change Capital (a City of London boutique merchant bank), Goldman Sachs' North American carbon trading desk, and the carbon trading firm C-Quest Capital.

Another connection is the sheer prominence of the financial sector in the carbon business. Among the largest buyers of UN carbon credits today are financial-sector speculators such as Barclays Capital, Deutsche Bank, BNP Paribas Fortis, Kommunalkredit, Sumitomo Bank and – again – Goldman Sachs. Private equity firms and private or public carbon funds are also active. Financial firms can be expected to try to work the same magic with carbon that they deploy with other products. As early as 2008, Credit Suisse put together a US\$200 million deal that bundled together carbon credit-manufacturing projects in different stages of completion before slicing them up for sale to speculators. Just as mortgage-backed securities concealed from distant buyers and sellers the economic realities bearing on lower-income neighbourhoods in Detroit or Phoenix, so too such financialized carbon-commodity packages, with their even longer value chains, conceal the heterogeneous climatic and social impacts and conditions of assemblages of, say, hydroelectric projects in India, cookstove projects in Honduras, or schemes burning off methane from coal mines in China and industrial pig farms in Mexico. Integrated into index funds, carbon could come under the influence of speculative activity in other sectors, while also affecting food prices and thus subsistence. Some traders are now even betting on the collapse of the entire carbon credit market, just as many investors once bet on (and hence had incentives to hasten) the collapse of the US housing market. Via the financial sector, climate commodities may also soon be involved in a fresh round of debt-driven expropriation. 'Green bonds' backed by carbon assets are set to create a new Southern debt to the North, backed by Southern land and Southern public funds. In May 2011, for instance, a bond structured by Bank of America Merrill Lynch was announced which would repay investors out of returns from monetized ecosystem services provided

by rainforest, including carbon pollution credits.

Perhaps the most fundamental connection between the markets for carbon and for complex financial derivatives, however, is at the commodity level. Originating in a process of especially wrenching abstraction and subsumption of qualitative to quantitative relations, the commodities traded in both markets owe their evolved form to competition-driven mass-production techniques that expand the scope for crisis at every turn.

The new derivative products were created largely by disentangling from their previous contexts uncertainties (ranging from credit risk to default risk, interest rate risk, exchange rate risk and weather risk) so that they could be quantified, sliced, diced, liquefied and circulated around the world as independent, fully-fledged commodities. Contrary to the claims of financiers, these products have little in common with the more context-fettered policies offered by insurance companies, who tend to commodify (un)certainly only where they can attach independent, calculable probabilities to a specific, well-understood set of possible outcomes. Conventional insurance firms, in addition, supply 'safety equivalents' only to people who own the homes and businesses at risk, and only where they can use the law to stop policyholders from activating payouts by treating their own lives, homes and businesses as commodities fully exchangeable for insurance money. Nor, despite the popular critique, do the new financial derivatives have much in common with the limited bets offered by casinos. Casinos, like insurance companies, concentrate on actions whose odds are independent and can be precisely calculated. In addition, they deploy close surveillance of customers, frown on clients betting with other people's money, and remain hemmed in by various legal, moral and geographical restrictions that derivatives traders have successfully struggled to overcome. Nor, finally, did the mortgage-backed derivatives employed in the 'subprime financial system' have much in common with the comparatively conservative punts taken by banks under the old 'originate and hold' mortgage model, in which bankers' evaluation of (un)certainly was a more labour-intensive matter of local, face-to-face evaluation.

In order to expand credit by making it possible to sell certainty commodities to a wide range of cash-flush speculators (who serve as counterparties to hedgers), the mass production of certainty had to be greatly expanded, its labour-intensivity reduced, and various fetters limiting its commodification thrown off. This is where the algorithms introduced by 'quants' or quantitative experts came in. Thus the Black-Scholes equation published in 1973 helped expand the options market by offering a streamlined, academically-sanctioned way of calculating prices for uncertainty using reference sheets, calculators

and computers. Physicist David Li's Gaussian copula model, devised in 1999, similarly became the 'combustion engine of the collateralized debt obligation world',⁴ making the mass production of structured finance deals possible by displaying how corporate or mortgage defaults might correlate, thus helping to mechanize the manufacture of confidence in ways that made the provision of credit vastly more 'cost-effective'. Key to such processes was, roughly speaking, the 'mystification of uncertainty or contingency as if it were measurable as probability'.⁵

Like the new derivatives, carbon commodities work through a process of radical disembedding – in this case, disembedding the climate issue from the historical question of how to organize for structural, long-term change capable of keeping remaining fossil fuels in the ground. Ominously, however, the valuation paradoxes that afflict climate commodities are even more intractable than those that affect complex financial derivatives, to say nothing of more familiar commodities like ordinary futures or food, energy, and consumer durables. To understand why, it is necessary to explore in some detail the peculiar algebra through which the climate commodity is created.

THE FRAGILE ALGEBRA OF CARBON MARKETS

The climate crisis owes its origin to a variant of what Marx called the 'metabolic rift', in which huge quantities of fossil carbon are taken out of underground deposits to feed industry and subsequently build up in the air and oceans. The amount of carbon still remaining in fossil deposits is enormous compared to the amount that can be quickly absorbed by the above-ground system of atmosphere, oceans, vegetation, soil, fresh water and surface geology. In particular, the earth's living vegetation (today containing perhaps 600–1000 billion tons of carbon) is incapable of absorbing an injection of 4000-plus billion tons of extra carbon from fossil stores built up over millions of years.⁶ Because carbon brought to the surface cannot be got safely back underground in the form of coal, oil or gas over human time-scales, and because abruptly stopping the flow of fossil fuels out of the ground would be disruptive to accumulation, 'fixes' analogous to those applied to the original metabolic rift must be sought. The most important current framework for these fixes is carbon markets.⁷

Like other ecosystem services markets, carbon markets aim at 'creating and stabilizing new areas for capitalist activity',⁸ but also, more fundamentally, at securing those background conditions for accumulation that are most dependent on fossil fuels and most threatened by calls for emission cuts. In climate-speak, carbon markets' purpose is to 'make climate change

mitigation cost-effective'. Both rollout and rollback of state and interstate governance are involved. The rollout side is particularly crucial. State and interstate agencies use neoliberal theory to transform the qualitative problem of climate change mitigation – essentially a question of organizing the long-term, structural political and social changes required to keep most remaining fossil carbon in the ground – into a quantitative field of scarce, ownable items; distribute them among a worldwide grid of proprietors including nation states, companies, communities and individuals; produce the new commodities and stimulate accumulation; and sustain and govern trading systems.

The requirements of commodity creation – accounting, ownership, the possibility of capital accumulation – lead naturally to the framing of the climate problem, and 'climate services', in terms of flows of molecules, especially CO₂ molecules. Since molecules are, in a sense, 'pre-standardized', they can be easily quantified in bulk, and rights to transfer them from one place to another readily owned and commodified, at least in theory. Moreover, in molecular markets, actions and technologies that reduce the emissions of the same number of CO₂ molecules over the short term can be treated as equivalent. This is done regardless of the degree to which they foster structural change away from fossil fuels, and thus lower CO₂ levels, over the long term – which must always be the criterion for effective climate strategy. In molecular markets, a cut of 100 million tons through routine efficiency improvements bears the same value as a 100-million ton cut that comes from, say, strategic investment in non-fossil-fuelled technologies, or from other actions with superior long-term effects on climatic stability. Such markets can operate for a long time without incentivizing long-term strategies for keeping coal, oil and gas in the ground. Rights to molecule flows, therefore, are ideal candidates for climate market commodities under political regimes committed to the unearthing of remaining fossil fuels. Accordingly, carbon markets' foundational equation (as ratified by states and the UN) becomes:

a better climate = reductions in CO₂ emissions

But if there is to be a market in these reductions, someone must need to buy them and someone must be on hand to 'produce' or exercise proprietorship over them. (To put it another way, if there is to be a market in greenhouse gas pollution dumps, someone must make them scarce – enclose them – and someone must 'own' and collect 'rent' for them from willing or unwilling customers.) Setting up the necessary apparatus is again, as a rule, the job

of states, which both impose demand for reductions and provide means of ‘producing’ and owning them. Either independently, or under international agreements, governments accomplish the former by imposing ‘caps’ or limits on emissions on various economic sectors. To create the reduction commodity itself, they then resort to the additional equation:

**mandatory reduction of CO₂ emissions to level c within
time period p = tradable right to emit CO₂ up to level c by
the end of period p**

Carbon dioxide reductions (and by inference climate action) can then be achieved by ‘production’ and distribution of tradable pollution rights, whose scarcity is determined by government fiat.⁹ Progressive reductions are accordingly achieved by relying on the equation:

**reducing CO₂ emissions progressively = issuing fewer
tradable rights to emit CO₂ in period $p + 1$ than were
issued in period p**

All of this requires a large investment on the part of the state and international agencies in monitoring, reporting and verification, as well as in erecting new legal structures. Government departments, scientists on UN panels, and technical experts of all kinds are delegated to follow and count molecules as they travel from underground hydrocarbons to the smokestacks or tailpipes from which they start cycling among air, oceans, vegetation, soils, rock formations, fresh water, and so on. Politicians, diplomats and officials try to assign responsibility for molecule flows, reductions and savings to various countries and corporations, using the criterion of physical location.

The rentier/producers of CO₂ pollution rights, accordingly, are in the first instance states themselves. European Union Allowances, for example, are ‘produced’ in a preset amount by strokes of politicians’ and bureaucrats’ pens under the EU ETS. They are then sold or, more usually, given away free, to large private sector polluters. Once in the hands of polluters, the new rights-to-destroy can then be bought and sold so that pollution is distributed in a way that minimizes aggregate costs. Price signals, it is assumed, will provide sufficient incentive for carbon-inefficient firms to mend their ways. By creating and handing out large quantities of commodified pollution rights, the EU ETS not only moderates pressures to reduce use of fossil fuels, thus protecting general conditions for accumulation, but also directly generates hard cash for the private sector. For example, many European

corporations sell or charge their customers for surplus emissions rights that they receive *gratis* under the EU ETS, ploughing the proceeds back into fossil-fuelled business as usual¹⁰ or using them as a slush fund to help them weather the financial crisis. European power companies alone are set to gain US\$127 billion in windfall profits through 2012 through the EU ETS;¹¹ the handouts given to only ten of Europe's intensive industrial users of fossil fuels exceed the total EU budget for environment.¹² Importantly, what the EU ETS creates rights to and distributes to the private sector is not merely a local or national public good, but a global public good.

Carbon markets' focus on CO₂ molecules also encourages an open-ended dynamic of abstraction that helps expand the scope for accumulation in climate change mitigation still further. By founding carbon markets on the equation 'a better climate = a reduction in CO₂ emissions', market architects in economics departments, trading firms, NGOs – and, ultimately, states and UN agencies – have made possible a cascade of further profit-generating equivalences, for example:

CO₂ reduction A = CO₂ reduction B

CO₂ reduction in place A = CO₂ reduction in place B

CO₂ reduction through technology A = CO₂ reduction through technology B

CO₂ reduction through conservation of biota = CO₂ reduction through keeping fossil fuels in the ground

Each such equation encourages capitalists to try to achieve cost savings in 'reduction production' by moving their operations around the globe, switching from one technology to another, avoiding risky investments in low-carbon technologies by annexing cheap carbon-absorbing lands in the global South, and so forth.¹³

Carbon trading's molecular focus also opens up the lucrative possibility of using greenhouse gases other than CO₂ in the manufacture of climate commodities. In response to UN demands to calculate country emissions, the Intergovernmental Panel on Climate Change (IPCC) had early on posited a whole range of CO₂ 'equivalents' – including methane, nitrous oxide (N₂O) and various chlorofluorocarbons including the industrial by-product HFC-23 – that were later appropriated by carbon market architects. Although it is a formidable feat of commensuration to quantify the 'global

warming potential' of all these compounds in comparison to CO₂, due to their qualitatively different behaviour in the atmosphere over various time spans as well as the different influence the control of each might have on fossil fuel use, the IPCC has not hesitated to stipulate comparative numerical estimates for each gas's effect. It claims, for example, that methane (CH₄) is 72 times more harmful than carbon dioxide over a 20-year time span, 25 times more potent over a 100-year time span, and 7.6 times more potent over a 500 year period. Carbon markets then abstract even from these figures, discarding the 20-year and 500-year time horizons and eliding what are in many cases enormous 'error bands' (in the case of HFC-23, plus or minus 5000). What remains are equations such as

$$\text{CH}_4 = 25 \text{ X CO}_2$$

$$\text{N}_2\text{O} = 298 \text{ X CO}_2$$

$$\text{HFC-23} = 14,800 \text{ X CO}_2$$

Having abstracted from the climate crisis to CO₂ molecules, in other words, the markets now abstract from CO₂ to a highly simplified 'carbon dioxide equivalent', or CO₂e, which represents a common value enabling the exchangeability of a whole range of greenhouse gases. The ratios displayed in the three equations above display clearly the efficiency advantages to be gained by applying mass production techniques to the manufacture of carbon pollution rights. They also demonstrate the importance of climate experts in that process: the slightest revision in estimates of gas 'equivalences' could signify millions of dollars in profit and loss.¹⁴

In some pollution trading systems – for example, the US sulphur dioxide market invented in the 1990s – governments are the only commodity producers (although they typically quickly sign over ownership to private corporations). However, in most climate markets, other parties are encouraged to collaborate in the production of a second type of commodity for sale in the same markets in order to make more cost savings, investment and speculative opportunities possible. Known as 'offsets', these products are funded by polluters subject to a government 'cap' but are generally manufactured by projects outside the cap. Such projects – which might include, for example, hydroelectric dams or methane-burning operations at landfill sites – are allowed to produce further divisible, measurable, thing-like climate-benefit units if they can satisfy regulators that they result in the emission of less greenhouse gas than would be the case in the absence of the

carbon finance they receive. Project funders receive pollution rights that they can use in lieu of emissions reduction obligations under European and Japanese climate laws, sell on to third parties, or speculate with. Such offset commodities, in other words, presuppose the equations

CO₂e reduction under a cap = offset outside the cap

CO₂e reduction under a cap = ‘avoided’ CO₂e

The ‘avoided emissions’ generated by a wind farm in Oaxaca, for example, are made commensurable with the pollution rights handed out by European governments to their high-emitting industrial sectors.

Through this state-sanctioned framework for market exchange, the surplus-generating use of fossil energy by the industrial North is prolonged, while further profits are realized through commerce in a new commodity. For example, routine efficiency improvements at exceptionally dirty, coal-intensive iron works in rural India can generate cheap offsets that help high-polluting electricity generators in Europe – often, as elsewhere, sited in poorer communities – continue business as usual at the lowest possible cost in the face of EU restrictions on emissions. Like some other ambitious forms of market environmentalism, carbon offset trading not only morphs existing environmental regulation toward ineffectiveness (for example, by punching holes in emissions ‘caps’ and letting in offset credits from outside, thus ‘rolling back’ part of the regulation that underpins cap and trade schemes). It also helps head off demand for other regulatory measures more capable of addressing the fossil fuel problem in all its political complexity. It is probably not too much to say that since the 1980s, one of the unvoiced mottos of carbon markets’ more sophisticated supporters in government and the private sector has been to stop effective climate action before it starts.

Bringing to bear IPCC-sanctioned ‘equivalences’ between CO₂ and other greenhouse gases further multiplies the ‘efficiencies’ that offset trading bestows on big business at the expense of climatic stability. For instance, merely by destroying a few thousand tons of HFC-23, the Mexican chemical manufacturer Quimobasicos is set to sell over 30 million tonnes of carbon dioxide pollution rights to Goldman Sachs, EcoSecurities and the Japanese electricity generator J-Power.¹⁵ Assuming that destruction of HFC-23 can be carried out for US\$0.25 per tonne of CO₂e, and that a ton of CO₂ offset pollution rights can command \$19.50 on the EU ETS spot market (May 2011 prices), both the company and the financial sector intermediaries it sells to can realize super-profits. Industrial buyers of the permits can in turn

save \$128.50 a ton by using the rights in lieu of paying fines for not meeting their legal emissions requirements, while industrialists and speculators alike can turn to advantage the \$6 price differential between cheap Kyoto Protocol offsets (known as Certified Emissions Reductions or CERs) and more expensive European Union Allowances (or EUAs). Such ‘industrial gas’ offsets – generated at a handful of industrial installations in China, India, Korea, Mexico and a few other countries – still account for the bulk of Kyoto Protocol carbon credits, helping to keep carbon pollution rights so cheap that they approach the status of a second ‘free allocation’ of pollution rights to fossil-intensive European industry.¹⁶ And if such offset projects help keep the wheels on fossil-fuelled industries in the North, neither do they interfere in any way with the further entrenchment of coal, oil and gas in the global South.

Relentless competition and the lure of new profit opportunities drives a similar process of continual, creative elaboration of the equation

$$\text{actual CO}_2\text{e reduction} = \text{‘avoided’ CO}_2\text{e emission}$$

to maximize the number and type of activities that can be ‘avoided’. The greater the range and volume of ‘baseline’ pollution sources that can be imagined and quantified, and the higher that counterfactual emissions ‘baselines’ can be set, the more emissions that offset buyers and sellers can then claim to have ‘avoided’ and the more capital they can accumulate. Thus JP Morgan, BNP Paribas, and the World Bank are avid proponents of a prospective multi-billion-dollar market in ‘avoided deforestation’, in which projects can produce carbon credits even if they allow an *increase* in deforestation, as long as the increase is less than what regulators agree ‘would have happened’ in the absence of capitalist agency. The Optimum Population Trust is even selling carbon pollution credits from its family planning operations on the voluntary market, claiming that they generate a calculable number of ‘avoided’ humans and the greenhouse gas molecules they generate.

In general, carbon businesses wanting to get the jump on rivals have no choice but to ‘mechanize’ such number wizardry as much as possible, as well as to appropriate the maximum amount of unpaid quantification labour. Lobbying for standardized accounting methodologies that can be applied in project after project, they also seek highly-capitalized means of tallying molecules, such as satellite measurements of biotic carbon, which promise higher returns than labour-intensive, context-sensitive ground measurements. As a rule, only investors and producers with the

capital to hire expert, computer-equipped consultants with easy familiarity with government and UN regulation will succeed in the offset market.¹⁷ Investors tend to shun low-yield offset projects requiring labour-intensive accounting and hands-on work with communities and to outsource as much as possible of any menial accounting labour that may be required to states or nonprofit bodies hoping to finance their operations through carbon markets, such as conservation or development NGOs or even Indigenous Peoples' organizations. With the correct accounting techniques, a company investing in overseas 'carbon-saving' projects can increase emissions both at home and abroad on the pretext of reducing them, while also generating novel opportunities for financial speculation. For example, in net terms, the European corporate sector does not need to take any domestic action at all to reduce its emissions before 2017, 12 years after the onset of the EU ETS, partly because of the 1.6 billion tons of offset credits it is entitled to use. So far, over three-quarters of these have come from a few industrial gas projects, which even EU Climate Action Commissioner Connie Hedegaard admits have a 'total lack of environmental integrity'.¹⁸

Such techniques of 'internalizing the climate externality' are key to new appropriations of surplus. For example, the mere prospect of 'avoided deforestation' credits (much in the news at the 2010 Cancun climate talks) is already encouraging land grabs in Africa, Asia and Latin America whose vast extent is directly proportional to the high-energy intensity and high carbon dioxide production of fossil fuels.¹⁹ Unavoidably, this emerging market attributes to a narrow range of human agents – typically investors, professional forest managers, environmental organizations and police – a process of carbon conservation which is usually an outcome of millennia of inextricably interwoven relations between humans and their natural environment. Even if, as is exceedingly unlikely, a large share of the revenue from transactions in 'avoided deforestation' carbon credits were ever channelled to Indigenous communities with histories of forest protection, the result would still be a stupendous extraction of surplus value from generations of painstaking labour. The Wall Street firm McKinsey, for example, calculates that 2 gigatons of CO₂e could be reduced globally from 'slash and burn agriculture conversion' at a cost of less than €2 per ton. The figures (which have had a major influence on the governments of Brazil, Indonesia, Guyana, Democratic Republic of Congo and Papua New Guinea, as well as the World Bank and UN) are based on the opportunity cost of not deforesting or degrading land, which in the case of small-scale agriculture, much of whose yield is not sold on the market, can be very low. They thus favour climate action being taken on land controlled by people

who are the poorest in economic terms, who are then likely to be displaced at high human cost (not included in the calculations) and to see their store of knowledge of low-carbon subsistence livelihood provision depleted as a result (also not included in the calculations). In general, accumulation in the carbon markets takes place not through ‘decarbonization’ or ‘defossilization’ but through the algebra of expropriation.

Thus just as complex derivatives markets lost touch with what they were advertised as being ‘about’ (the provision of certainty), carbon markets have taken the climate issue and decontextualized, reengineered, and mathematized it until little of relevance to global warming is left. Worse: in their efforts to make certainty and climate benefit ‘economizable’, and to deploy mass production techniques, both markets have increasingly interfered with delivery of the very social goods their proponents claimed they were providing. One reason is what George Soros calls ‘reflexivity’, which in the financial markets involves investors’ observations, biases and calculative machinery disrupting the ‘economic fundamentals’ they are supposed to describe, leading, if ignored, to crisis. In the carbon markets, nations or corporations aware that they can be credited with ‘reducing’ more greenhouse gas emissions in 2020 if they fail to clean up today have an incentive to stay dirty, or even to roll back pollution regulation.²⁰ Firms may set up new factories to produce HFC-23 or N₂O in order to cash in on the carbon market²¹ or start up new commodity production lines by persuading governments not to enforce or promulgate environmental laws. In Nigeria, for instance, Western oil companies (with the collaboration of UN carbon market regulators) have contracted to sell carbon credits to Italy and Norway for avoiding gas flaring activities that have been stipulated as the ‘baseline’ in spite of the fact that they are illegal and unconstitutional.²² All of this, of course, reinforces a trend toward additional emissions that can then, in turn, also be lucratively ‘avoided’. Yet trying to ‘fix’ the contradiction by recalculating the baseline against which savings are measured in order to take account of perverse incentives merely creates another perverse incentive to change the new baseline as well. As in the derivatives markets, the calculative machinery necessary for a novel market is itself undermining the possibility of market calculation as well as engendering systemic instabilities.²³ Just as the risk markets wound up ultimately increasing risk, their drive for expanded liquidity resulting in a catastrophic drying up of liquidity, so too the Kyoto carbon markets ‘might so far even have contributed to increasing global emissions’.²⁴ Internalization has increased the number and severity of externalities; ‘modelling’ has expanded the scope and dangers of the unmodelable.

Both markets' claims to be helping the poor to mobilize assets have also come to less than nothing. The expanded credit offered to the US poor on the strength of the predicted future prices of their houses, while attractive to a government eager to maintain effective demand, turned out to be poisoned. The carbon market's claim to be able to offer the world's poor a lucrative opportunity to sell pollution rights to the rich, similarly, has wound up concealing resource grabs and scams disproportionately benefiting the wealthy in both South and North.²⁵

In notable respects, the contradictions of carbon commodities are even more explosive than those affecting complex financial derivatives. In the world of finance, even collateralized debt obligations (CDOs), although their underlying asset has been sliced, diced, and mixed in ways that make it virtually untraceable and unassessable, are, in the end, based on real, specifiable mortgages on actual houses. But the basis for a climate commodity that includes offsets cannot be specified, quantified or verified even in principle. To manufacture offsets by counting 'avoided CO₂ emissions', a baseline must first be established with which to compare current molecular activity. This baseline must be unique, since a single value, however arbitrary, is required for exchange to be possible. Hence the calculation of 'avoided emissions' not only demands the sort of knowledge human beings have never before attained, attempted, or believed possible. (Which of all the scenarios that counterfactual historians and novelists have imagined might have followed a Nazi invasion of Britain is the 'true' one?) It also demands, impossibly, that this knowledge come in the form of an extremely precise quantification of the associated hypothetical molecular movements. This impossibility of verification – and thus of regulation – gives corporations a licence to print climate money without much fear of sanction, since the distinction between counterfeit and legitimate currency is meaningless. As the Munden Group, a Wall Street consultancy, writes with respect to forest offsets, an 'opaque set of variable standards' creates 'a tremendous incentive to create (or destroy) supply as it suits the participants in the market'. In a carbon bubble characterized by continuing pressures to spin out fanciful equivalences involving climate and CO₂e molecules, the resulting asset valuation crisis and loss of confidence – some analysts use the term 'subprime carbon'²⁶ – could trigger severe economic effects. Not only does (temporary) success in commodity formation mean failure in climate action; the functioning of the commodity itself is ultimately in question.

However, having acquiesced in the growth of carbon markets for a decade and a half, most governments, with the possible exception of a few smaller Southern countries such as Bolivia, are now no more likely to want to

abolish them voluntarily than financial regulatory authorities worried about credit default swaps or CDOs were inclined to abolish these products in the years leading up to the financial crash. As Slavoj Žižek paraphrases Marx: ‘They know very well how things are, but still they are doing it as if they did not know. They no longer believe, but the things themselves (commodities) believe for them.’²⁷

CONCLUSION: FETISHISM AND IDEOLOGY

The CO₂ molecules used to build the global warming commodity are comfortably conceptualized as entities without a history, whether human or climatic. As such, they are representative of the wholly external yet universal ‘nature’ of post-18th century capitalist ideology described by Neil Smith in his lead essay in the 2007 Socialist Register on *Coming to Terms with Nature*.²⁸ As apolitical objects seemingly susceptible to manipulation, management and mastery by experts, they are easily treated, fetishistically, as ‘the’ cause of global warming.²⁹ The carbon market’s use of them in disembedding climate change from the history of fossil fuel use and re-embedding it in the movements of molecules emitted ‘by’ bounded nation states and corporations is accordingly an ideological as well as an economic operation. The equations that compose the algebra of carbon markets not only raise profit rates, but also run together, in a seemingly ‘apolitical’ and ‘self-evident’ way, activities with disparate effects on climate history. Thus ex-World Bank executive Robert Goodland, noting that methane released by domesticated animals causes ‘32 billion tons of carbon dioxide equivalent, more than the combined impact of industry and energy’, can effortlessly draw the conclusion that ‘replacing livestock products with better alternatives’ would have ‘far more rapid effects on greenhouse gas emissions ... than actions to replace fossil fuels with renewable energy’.³⁰

Similarly, it is an unavoidable part of the day-to-day technical methodology of carbon offset accounting that carbon project sponsors and managers are pictured as creating value (it is they who ‘avoid’ emissions that otherwise were ‘inevitable’), while nonprofessional actors in already low-emitting contexts or social movements actively working to reduce use of fossil fuels are demoted into passive objects of deterministic calculation or even global warming culprits. The task of building singular, calculable scenarios around ‘what would have happened’ to the world in the absence of each of thousands of particular carbon projects meanwhile leaves little room for debate about broader social and industrial change. Political conflicts over ‘whether another world was possible’ – and hence over how large industrial entitlements to the earth’s carbon dumps are to be – are attributed, as a

matter of methodology, to one side or the other having made a calculation error. As Marx showed, ideology goes all the way down into, and rises up from, the ‘metaphysical subtleties and theological niceties’ of the technical features of the commodity itself.

Yet the ideological moves embedded in carbon market structure are as contested and uncompletable as the rest of the commodification process. For instance, the accounting framework according to which anthropogenic climate change is caused by molecules emitted by bordered ‘geobodies’³¹ like ‘Pakistan’ or ‘Canada’ has often provoked conflict at international climate negotiations due to the way it occludes the history of fossil fuel use, its connection with surplus extraction and imperialism, questions of ecological debt and so forth. Thus the Chinese government has questioned whether all the molecules emanating from Chinese smokestacks are really ‘Chinese’, or should in part be attributed to the Western countries that consume the wage goods China produces – a particularly pressing issue given that in recent years Europe’s statistical claims to be making ‘progress’ on climate change, based on tabulating physical locations of molecules, conceal the fact that it has offshored much of its emissions.³² Taking an opposite tack, the aviation company United Continental recently warned that forcing all airlines flying into Europe to control their emissions in accordance with the EU ETS would ‘exceed the legal authority of the European Union’ by, for example, allowing Brussels to regulate molecules emanating from machines that are used to start jet engines in Los Angeles.³³

Supplementing what Žižek calls the ‘cynical’ fetishism through which officials and technocrats ‘no longer believe, but the commodities believe for them’³⁴ is a scapegoating style of ideology. Apologists for carbon markets typically blame their negative climatic results not only on ‘carbon cowboys’ and ‘corruption’, but, more importantly, on ‘inadequate regulation’ or ‘market design flaws’. As in the financial markets, enormous efforts are put into imagining, defining and policing boundaries between corruption and regulation and between fraud and normal market activity.³⁵ The state-corporate nexus necessary for the formation of the climate commodity is read as a ‘potential’ conflict of interest, reflexivity as a ‘flaw in market design’ rather than as part of the design itself, erosion in the rule of law as accidental rather than inherent. The carbon market’s decade-long failure to achieve climate results is attributed to ‘insufficiently tight emissions caps’, and thus failed ‘governance’, rather than as flowing from a structure in which the caps’ function is to create a new commodity without affecting general price stability or fossil fuel dependence, as well as to keep other climate initiatives at bay. What with its own ever-renewed failures, a self-perpetuating carbon

market reform industry need never rest idle. To borrow the words Michel Foucault applied to the prison, the carbon market has ‘always been offered as its own remedy: the reactivation of [its] techniques as the only means of overcoming [its] perpetual failure ... the supposed failure [is] part of [its] functioning’.³⁶

Scapegoating ideology, however, is as double-edged as its cynical variety, or as the climate commodification process itself. Depending on political circumstances, calls for ‘better regulation’ or ‘crackdowns on corruption’ can intersect fruitfully with the more strategic, long-term campaigns for decommodification of the earth’s carbon-cycling capacity being undertaken by grassroots movements and groups such as Via Campesina, the California Movement for Environmental Justice, and movements in Ecuador, Canada and Nigeria opposing fossil fuel extraction.³⁷ Useful information on patterns of subsidies provided to fossil fuel polluters by the EU ETS, or on the perverse incentives associated with HFC-23 projects, often come from groups clinging to the fetish of reform, and important analyses of the contradictions of the climate commodity from Wall Street consultants who would be horrified at the extent to which their contributions are aiding the understanding of radical movements against the trade. Thus while frank discussion of the consequences of the continuing unfolding of the contradiction between exchange-value and use-value in carbon markets is more politically productive when undertaken with affected publics than with fetish-constrained state officials and technocrats, or in the pages of the financial press, political spaces for breaking the trance that carbon markets have imposed on climate policy can be, and are being, opened at many levels.

NOTES

I am grateful for comments and discussion to Andres Barreda, John Saxe Fernandez, Steve Suppan, Jutta Kill, Ricardo Coelho, Hendro Sangkoyo, Martin Bitter, Oscar Reyes, Raul Garcia, Matthew Paterson, Gar Lipow and Arief Wicaksono.

- 1 Karl Marx, *Capital*, Volume 1, London: Penguin, 1990, p. 198.
- 2 Jamie Peck and Adam Tickell, ‘Neoliberalizing Space’, *Antipode*, 34(3), 2002.
- 3 After a slight uptick to nearly \$144 billion in 2009, total market value declined to \$142 billion in 2010. The EU ETS’s share of world carbon markets stood at about 97 per cent in 2010, including the EU’s purchase of carbon credits manufactured in the global South under the Kyoto Protocol (see World Bank, *State and Trends of the Carbon Market 2011*, Washington: World Bank, 2011). Worldwide, it is mainly EU allowances and Kyoto Protocol credits that are bought and sold through trading platforms and over the counter. However,

there exist many other carbon markets. Some of these are, like the EU ETS, ‘compliance’ markets – components of government regulatory programmes for greenhouse gases. An example is the Regional Greenhouse Gas Initiative set up to regulate emissions from the electricity sector in some states in the Northeastern US – which also slumped in 2010. Other such schemes exist in New Zealand and New South Wales. Plans for yet other compliance markets in Japan, Australia, Korea, some regions of China, California and some other western US states are meanwhile facing delays and obstacles. So-called ‘voluntary markets’ selling unofficial carbon commodities have seen large increases in trading volume but remain relatively small at less than 0.3 per cent of global carbon markets. They too have suffered some setbacks, notably the collapse, in late 2010, of the Chicago Climate Exchange’s cap and trade program among volunteering corporations. Carbon market proponents, however, remain hopeful that the markets will eventually grow into the trillions of dollars.

- 4 Gillian Tett, *Fool’s Gold: How Unrestrained Greed Corrupted a Dream, Shattered Global Markets and Unleashed a Catastrophe*, London: Abacus, 2009, p. 121.
- 5 Stephen Gudeman, *Economy’s Tension: The Dialectics of Community and Market*, London: Berghahn, 2008, p. 141.
- 6 See P. Falkowski, R. Scholes et al., ‘The Global Carbon Cycle: A Test of Our Knowledge of Earth as a System’, *Science*, 290(5490), 2000. The equivalent of the earth’s entire production of plant and animal life for 400 years is today burned every year in the form of fossil fuels. See H. Haberl, ‘The Global Socioeconomic Energetic Metabolism as a Sustainability Problem’, *Energy* 1(1), 2006 and J. S. Dukes, ‘Burning Buried Sunshine: Human Consumption of Ancient Solar Energy’, *Climatic Change* 61(1–2), 2003.
- 7 Also important are expedients such as carbon capture and sequestration, which would liquefy fossil-origin carbon dioxide emitted by power plants and transfer it to a new ‘waste frontier’ in leaky geological formations. Such ‘fixes’, of course, open new metabolic rifts. For example, just as, in the original rift Marx described, cities accepted one-way shipments of soil nutrients from depopulated and privatized rural lands in the form of food and fibre, a carbon-constrained industrial sector is now engendering a new country-city contradiction by attempting to seize biotic carbon for its own use, again without any prospect of ‘giving it back’ to the rural areas from which it comes.
- 8 Morgan M. Robertson, ‘The Neoliberalization of Ecosystem Services: Wetland Mitigation Banking and Problems in Environmental Governance’, *Geoforum*, 35(3), 2004, p. 362.
- 9 It is essential to clarify the nature of these rights, since their status is a source of perpetual confusion among progressives as well as market actors in the climate debate. The pollution rights issued to the North and Northern industry under the Kyoto Protocol and the EU ETS are not exclusionary in the sense that ordinary private property rights are (nor are they permanent, since the number of rights given out can be reduced over time). Under Kyoto, nations and industries in the global South are allowed to continue using global carbon sinks without restriction. This has led to the popular belief that Kyoto is ‘progressive’ in that it allows special privileges to the South while imposing

binding limits on the North, in accordance with the principle – enshrined in the UN Framework Convention on Climate Change – that South and North have ‘differentiated responsibilities’ for global warming. This superficial account leaves out four crucial facts. First, while Kyoto does not enclose the earth’s carbon-cycling capacity in the classical sense of excluding others from access to it, it does exclusively provide nation states and private firms in industrialized countries with legal and economic guarantees protecting their power to harm others by overusing that capacity. Second, Southern nations’ permission to continue greenhouse gas pollution, unlike that accorded to Northern nations and industries, does not come in a lucrative *commodity form*. In other words, Kyoto, like the EU ETS, awards assets to the North but not to the South. Third, even if, as now seems unlikely, Southern nations were brought under a global ‘cap’ and issued commodities, it would only be in an amount proportional to their much smaller historical use of fossil fuels. Finally, the primary function of caps is not to limit emissions (from the point of view of most climate scientists, the Kyoto Protocol’s caps are derisory) but rather to fulfil the conditions for commodity creation. Caps are likely to continue to be set at a level lax enough to allow fossil fuel-based accumulation to proceed smoothly in the North, but just strict enough to create a climate commodity – also for the benefit of the North – at the same time. In all of these senses, a regime of emissions restrictions that appears formally to favour the South in fact favours the North.

- 10 Michael Pahle, Lin Fan and Wolf-Peter Schill, ‘How Emission Certificate Allocations Distort Fossil Investments: The German Example’, *Energy Policy*, 39(4), 2011.
- 11 Oscar Reyes, ‘The EU Emissions Trading System: Failing at the Third Attempt’, Corporate Europe Observatory and Carbon Trade Watch, Barcelona, April 2011. Free handouts to the private sector may be cut back somewhat after 2012, but will continue in key industrial sectors.
- 12 Sandbag, ‘The Carbon Rich List: The Companies Profiting from the EU Emissions Trading Scheme’, London, February 2010.
- 13 Nicholas Stern, an ex-World Bank economist, carbon businessman and author of the British government’s influential Stern Report, calls the latter a ‘very good deal’. See *The Global Deal: Climate Change and the Creation of a New Era of Progress and Prosperity*, New York: Public Affairs, 2009, p. 166.
- 14 Donald MacKenzie, ‘Making Things the Same: Gases, Emission Rights and the Politics of Carbon Markets’, *Accounting, Organizations and Society*, 34, 2009, pp. 440–455.
- 15 United Nations Risoe Centre, ‘CDM Pipeline Overview’ 2011, available at <http://cdmpipeline.org>.
- 16 In January 2011, EU member states approved a proposal to ban HFC-23 and N₂O offsets effective 1 January 2013. Industry then lobbied for the date to be pushed back to April 2013. The delay effectively nullifies 1–2 years’ worth of emissions reductions within Europe. See Corporate Europe Observatory, ‘Laughing All the Way to the (Carbon Offset) Bank: Collusion between DG Enterprise and Business Lobbyists’, April 2011.

- 17 A small handful of consulting firms dominate the sector, including Det Norske Veritas, TUV Sud, SGS, and Deloitte, collecting large fees and working closely with UN regulators.
- 18 Reyes, *The EU Emissions Trading System*, p. 1.
- 19 In October 2010, for instance, Liberia's president demanded the extradition of a British carbon businessman on charges of bribery in connection with a deal to lease a substantial percentage of the country as carbon offsets worth up to US\$ 2.2 billion. See www.redd-monitor.org for many other examples.
- 20 Michael Szabo, 'Kyoto May Push Factories to Pollute More: UN report', *Reuters*, 2 July 2010; 'EU Lawmakers Wade into HFC Debate', *Point Carbon*, 15 July 2010; Herbert Docena, *The Clean Development Mechanism in the Philippines: Costly, Dirty, Money-Making Schemes*, Focus on the Global South, Bangkok, 2010, available at <http://www.thecornerhouse.org.uk>. The World Bank, similarly, by lowering its efficiency standards for thermal power plant loans, has been able to ramp up production of carbon credits and thus boost revenues from the 13 per cent brokerage fee it charges for the offset transactions it mediates, see Daphne Wysham, 'Nothing More than Hot Air', *Earth Island Journal*, Summer 2011. In May 2011, carbon traders expressed opposition to a new European directive proposing cuts in energy consumption in buildings, vehicles and industry on the ground that it would reduce demand for carbon pollution rights and depress carbon prices; see Pete Harrison, 'EU Energy Plan Threatens Carbon Billions', *Reuters*, 30 May 2011. It is no surprise that a large proportion of Kyoto Protocol carbon offset projects that claim to be 'reducing' emissions in fact directly support the expansion of fossil fuel use, which exacerbates global warming. Carbon offsets are providing extra finance for gas pipelines, fossil fuel-fired generating plants, coal mines and oil wells. See United Nations Risoe Centre, 'CDM Pipeline Overview'.
- 21 Fred Pearce, 'Carbon Trading Tempts Firms to Make Greenhouse Gas', *New Scientist*, 16 December 2010.
- 22 Isaac Osuoka, 'Paying the Polluter? The Relegation of Local Community Concerns in "Carbon Credit" Proposals of Oil Corporations in Nigeria', in S. Böhm and S. Dabhi, eds., *Upsetting the Offset: The Political Economy of Carbon Markets*, London: MayFlyBooks, 2009; United Nations Risoe Centre, 'CDM Pipeline Overview'. Osuoka's investigation of Nigerian carbon offsets devised by Western oil companies and carbon consultant firms found that it was nearly impossible to determine whether the gas that the companies claimed will be diverted from flaring to productive use would not in fact come from dedicated gas extraction operations, whose production is not flared.
- 23 George Soros, *The New Paradigm for Financial Markets: The Credit Crisis of 2008 and What it Means*, New York: Public Affairs, 2008; Edward Li Puma and Benjamin Lee, *Financial Derivatives and the Globalization of Risk*, Durham: Duke University Press, 2004, p. 36.
- 24 Dieter Helm, 'Government Failure and Rent-Seeking and Capture: The Design of Climate Change Policy', *Oxford Review of Economic Policy*, 26(2), 2010, p. 189.
- 25 See Herbert Docena, *The Clean Development Mechanism in the Philippines* and

- various issues of the Indian climate change magazine *Mausam*, available at <http://www.thecornerhouse.org.uk>.
- 26 Michelle Chan, *Subprime Carbon: Rethinking the World's Largest New Derivatives Market*, San Francisco: Friends of the Earth, 2009. As argued above, however, the difficulties are more profound than those associated with the so-called subprime crash, although the economic stakes are, so far, not so high.
 - 27 Slavoj Žižek, *The Sublime Object of Ideology*, New York: Verso, 1989, p. 31.
 - 28 Neil Smith, 'Nature as Accumulation Strategy', *Socialist Register 2007: Coming to Terms with Nature*, Monmouth: Merlin Press, 2006, pp. 16–36.
 - 29 For example, the well-known US climate activist Bill McKibben has characterized the climate change issue as a 'fight between human beings on the one hand, and physics and chemistry on the other'. See 'Bless Bolivia for Recharging the Fight to Rescue Our Climate', *Huffington Post*, 1 April 2010, available at <http://www.huffingtonpost.com>. The global activist network McKibben is associated with, 350.org, embodies the CO₂ fetish in its very name, referring to the '350 parts per million' atmospheric concentration of CO₂ target.
 - 30 Robert Goodland and Jeff Anhang, 'Livestock and Climate Change', *Worldwatch*, November/December 2010, pp. 10–19.
 - 31 The term is from Thongchai Winichakul's seminal *Siam Mapped: A History of the Geo-Body of a Nation*, Honolulu: University of Hawaii Press, 1994.
 - 32 An increase in 'imported' emissions in mining and manufactured goods from the global South wipe out the (insignificant) emissions cuts Northern countries promised to make under the Kyoto Protocol. For example, the UK's claimed emissions cut of 11 per cent from 1990 to 2008 turns into a 6 per cent increase when 'offshored' emissions are included. See G. P. Peters, J. C. Minx, C. L. Weber and O. Edenhofer, 'Growth in Emission Transfers via International Trade from 1990 to 2008', *Proceedings of the National Academy of Sciences*, 108(21), 2011.
 - 33 Pilita Clark, 'United Warns EU on Emissions Scheme', *Financial Times*, 3 April 2011.
 - 34 The markets' dominant players and architects typically do not even bother trying to defend them against charges that they are environmentally ineffective. See, for example, Organization for Economic Cooperation and Development, 'Scaled-Up Market Mechanisms – What is Needed to Move Forward? A Summary of Recent OECD/IEA Analyses', November 2010, available at <http://www.oecd.org>.
 - 35 Thus financial journalists' coverage of the sensational scandals that now wash over the carbon markets every few months – massive electronic thefts, double-selling, fraudulent accounting, land swindles, billion-dollar tax cheats, and so on – serves partly to reiterate the idea that better 'regulation' will be able to tackle future problems. Just as no effort is too great when it comes to investigating a Madoff or a Rajnaratnam if it helps to draw a distinction between what they do and what is 'normal' or unproblematic in financial markets, so too no effort is too great in probing the shenanigans of 'carbon cowboys' selling obviously bogus products if it helps to consign any deeper inquiry into the structure of

carbon markets to the trash pile of ‘anticapitalist ideology’. This is one reason why some of the best news coverage of corruption in carbon markets, as in financial markets, is to be found in publications such as the *Financial Times* and *Bloomberg*.

- 36 Michel Foucault, *Discipline and Punish: The Birth of the Prison*, London: Penguin, 1979, pp. 268, 271.
- 37 For documentation on such emerging movements, which are beyond the scope of this article, see Tamra Gilbertson and Oscar Reyes, *Carbon Trading: How it Works and Why it Fails*, Uppsala: Dag Hammarskjold Foundation, 2009; Patrick Bond, ‘Carbon Trading, New Enclosures and Eco-Social Contestation’, *Antipode*, forthcoming; and websites such as <http://www.carbontradewatch.org>, <http://www.viacampesina.org>, <http://www.durbanclimatejustice.org> and <http://www.ejmatters.org>, <http://www.thecornerhouse.org.uk>. Such ‘decommodification’ movements typically align themselves with related movements against commodification of water, electricity, health services and fossil fuels, as well as land rights, labour, tax reform, alternative energy, alternative transport and food sovereignty movements and victims of the ‘dispossession through algebra’ that became visible with the recent financial crash.