

*General Problems of Political Conceptology***TECHNOLOGICAL DISPLACEMENT
AND CAPITALIST CRISES:
ESCAPES AND DEAD ENDS***R. Collins**University of Pennsylvania (USA)*

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Current world economic crisis ought to remind us of Marx. This is an intellectual call, not a call to remobilize old party organizations. Marxism as politics had its high points and its low points, and I do not propose returning to the era of ideological battles and factional struggles. I call on Marxism here not as practice, but as an intellectual tool that we as sociologists very much now need.

I make no claims for the purity or authenticity of the lesson that I draw from Marx. Sociology today, if it believes in anything, believes in multiple processes, multiple causes, and multiple paradigms for dealing with our chosen aspects of the world. In an important sense, in sociology Weber has triumphed over Marx, and we all talk about the interpenetration of class, politics, and culture, and of gender too. Nevertheless, there are moments when the key feature of long-term structural change is at issue – and above all the issue of structural crisis. Here, for all our multi-disciplinarity and our celebration of intellectual diversity, is an occasion when it seems to me one line of theory stands head and shoulders above all others in dealing with the mechanisms of crisis and the direction of very long-term structural change. The theory I will extol is a stripped-down version of Marxism, the fundamental insight that Marx and Engels formulated already in the 1840s. The key mechanism I will call technological displacement.

It is a stripped-down Marxism indeed. No labour theory of value, no reference to expropriation of labour from the means of production, no alienation from species being. It makes no ontological claims and does not posit any deep emancipation at the end of the crisis. I have stripped it down to a theory of longterm economic crisis; we need other lines of sociology for what happens in response to the crisis, and what arises politically and socially afterwards. Moreover, it is not a theory of the conquest

of the state as result of economic crisis, not by itself alone a theory of revolution – although at the end I will discuss what sociologists have learned about the causes of revolution. And although it has implications for the future of socialism, it is not a theory of socialism and what would make socialism work better in the future than it did in the past. No, it is a theory of crisis first and foremost.

Technological displacement is the mechanism by which innovations in equipment and organization save labour, thereby enabling fewer employed persons to produce more at lower cost. Marx and Engels argued that capitalists strive to increase profit in competition with each other; those who fail to do so are driven out of the market. But as labour-saving machinery replaces workers, unemployment grows and consumer demand falls. Technology promises abundance, but the potential product cannot be sold because too few persons have enough income to buy it. Extrapolating this underlying structural tendency, Marx and Engels predicted the downfall of capitalism and its replacement by socialism.

Why has this not happened in the 160 years since the theory was formulated? As is well known, where socialist regimes have come into power, the transition was not driven by capitalist economic crisis – nor indeed when they have fallen out of power. My point here, is the absence of definitive capitalist breakdown through technological displacement. Marx and Engels focused on the displacement of working class labour; they did not foresee the rise of the massive middle class of white-collar employees, of administrative and clerical workers and educated professionals. But this is why I now argue for the return of technological displacement crisis. Until the 1980s or 90s, mechanization chiefly displaced manual labour. In the most recent wave of technology, we now have the displacement of administrative labour, the downsizing of the middle class. Information technology is the technology of communications, and it has launched the second great era of contraction of work, the displacement of communicative labour, which is what middle-class employees do. Mechanization is now joined by robotization and electronicization – an ugly and ungainly term to add to our vocabulary of ugly terms for ambiguous social processes dictating our longterm future.

As the working class shrunk through mechanization, capitalism was saved by the rise of the middle class. Now computerization, the internet, and the wave of new micro-electronic devices are beginning to squeeze out the middle class. Can capitalism survive this second wave of technological displacement?

In the past, capitalism has escaped from technological displacement crises by five main escape routes. I will argue that all five of these now are becoming blocked – dead ends.

Escape Number 1 : New technology creates new jobs and entire new job sectors. Pessimism about new technology has long been considered futile and wrong-headed. The Luddites in 1811 who broke machines that destroyed the jobs of handicraft workers did not see that their system of production was giving way to a factory system which would vastly expand industries and increase, for over a century, the numbers

of factory workers. Development theory, formulated in mid-20th century, holds that the natural tendency is to move through the stages of primary, secondary, and tertiary labour sectors – i.e. extractive, manufacturing, and administrative or service work. But development theory was just an empirical generalization from a particular time in history; there is no guarantee that this process will go on forever.

Schumpeter, the best theorist of capitalist innovation, theorizes that new products – and hence the major sources of profit – come on the market by reorganizing the factors of production into new combinations; this always involves what Schumpeter called “creative destruction”. Nevertheless, Schumpeter-inspired economists too rely on nothing more than extrapolation of past trends for the argument that the number of jobs created by new products will make up for the jobs lost by destruction of old markets.

None of these theories take account of the technological displacement of communicative labour, the escape valve that in the past has brought new employment to compensate for the loss of old employment. It has been argued that as telephone operators and file clerks lose their jobs to automated and computerized systems, an equal number acquire jobs as software developers, computer technicians, and mobile phone salespersons. But no one has shown any good theoretical reason why these numbers should be equal; much less why the automation of these kinds of technical and communicative tasks – for instance by shopping on line – cannot drive down the size of the white collar labour force. Technological displacement of middle class labour is still in its early stages – on the whole, not much more than 20 years old; whereas it took about 120 years to destroy the working class labour force. I don't think that it will take anything near 120 years to destroy the middle class.

Escape Number 2 : Geographical spread of markets. We tend to think of this as globalization, but globalization is only a quantitative difference in degree, not a qualitative difference in kind. Even within the confines of state borders, markets have grown by spreading to regions where a product was initially unknown; thus local conditions favored profit for the innovator coming from elsewhere. Geographical spread works in tandem with product innovation, keeping up the ongoing existence of market frontiers. Dynamic markets always have the buzz of newness, the cultural prestige of being a center or keeping up with a center, or the negative prestige of striving to escape from backwardness. The liberal version of this mechanism, on the global or inter-state scale, is modernization theory or development theory; each part of the world successively ascends the stages, until presumably all will be fully developed, tertiary-sector service economies. We are now seeing this come into being, the argument goes, in India and China, the big nations of the Third World making their way inexorably to modernity.

The Neo-Marxist version of this process is World-System theory. This is a less benign version of the geographical spread of capitalist markets; world market domination is buttressed by military power and political influence; the hegemonic center exploits the labour or raw materials of the periphery, with the aid of a trans-

mission belt of semi-peripheral regions. World-system theory complicates the pattern by a succession of hegemonies marked by major wars, and keyed to long Kondratieff waves of relative expansion and stagnation in world markets. But these cycles of serial hegemonies – Spain, Holland, Britain, the United States, conjecturally China – logically come to an end when the periphery is exhausted, and every region of the globe is fully brought into the capitalist market. There is no more safety-valve, no more regions for exploitation; capitalist profit dries up.

Leaving aside the specific merits of world-system theory predictions, the point I would emphasize is that globalization of markets is now undercutting middle class jobs. Internet technology makes it possible for white collar workers in India – or anywhere else – to compete for jobs in servicing computerized businesses in the core capitalist regions of the world. Whereas in the past middle class workers have been protected from competition to a greater degree than manual workers, this is no longer true; the internet creates a much wider pool of workers who can access available jobs, especially if they do not have to physically move to a distant place of work. To be sure, contemporary globalization also involves much more rapid international travel. Managerial and professional workers physically move their expertise and their negotiating skills to entrepreneurial sites around the globe; this has the further effect of homogenizing upper-middle class labour into a single labour market, raising the prospects of cheapening management costs, and displacing even high-level technocratic labour. Greater connectedness leads to greater competition for jobs, undercutting middle-class salaries. Again I would emphasize that this process is relatively recent; the jet-set boom of the upper-middle class in recent decades is becoming vulnerable to the same structural displacement that the experts have visited upon their employees.

In the past, international migration provided cheap labour for centers of manufacturing, and more recently for the lower levels of the advanced service economies, thereby undercutting the working class of wealthier nations. Now as communications technology tends to spread cultural capital more homogeneously around the globe, it is middle and upper middle class labour that is being undercut.

Escape Number 3 : Meta-markets in finance. If working class and then middle-class labour are technologically displaced, can the slack be taken up by everyone becoming a capitalist? This argument has been advanced as employee pension funds came to play a large role in financial markets, and as financial services firms have expanded, and have aggressively marketed investments to a larger constituency. In countries like the US, where home ownership is widespread, the inflation of housing prices brought opportunities, not only to treat home ownership as a speculative investment, but to withdraw equity from inflated housing prices in the form of cash for consumer spending. These financial practices have been among the short-term sources of the current economic crisis and especially the financial meltdown of 2008.

I am not proposing that our current crisis is the beginning of the end of capitalism. We will no doubt ride out this crisis, like other crises, in the short run, while

leaving a certain amount of longterm damage. But recent financial manipulations are examples of a deeper structural tendency in capitalism: the pyramiding of meta-markets upon each other in financial markets. Capitalism, ever since it entered its phase of self-sustaining growth or internally-driven expansion, has connected markets for material goods and services with markets for financial instruments. Schumpeter defined entrepreneurial capitalism as enterprise carried out with borrowed money. Static markets merely reproduce existing stocks and work forces, unless new combinations are taken out of the circular flow of reproduction; this is done by borrowing against the future. Thus in Schumpeter's view, banks are the headquarters of the capitalist system, deciding where new allocations for development will be made. But since financing is intrinsically speculative, its relationship with existing material arrangements can vary enormously. The upper atmosphere of the financial system can have many multiples of the value of what is actually bought and sold in material goods and services; we see this, for instance, in the vast amounts of money in international currency speculation, in relation to the size of GDP, or the extraordinarily inflated sums in hedge funds, especially before the 2008 crash.

By pyramiding meta-markets I mean the historical tendency for any given financial market to give rise to a higher-order market in lower-order financial instruments. In real social practices, all monies are promises to pay in the future. Thus financial specialists can create promises to pay promises to pay, and so on up to almost any level of complexity. Loans, liens, equities, bonds, all these are relatively low levels of pyramiding. Short-selling stock market shares, bundling mortgages for secondary resale markets, leveraged buyouts, mutual funds, hedge funds, and other complex trading schemes are higher-order markets upon the instruments of exchange. The latest fad is so-called ETFs, exchange traded funds, as touted in the June 1, 2009 Financial Times: "Leveraged and inverse ETFs – which claim to generate two or three times the return of an underlying index or a multiple of the inverse of the index... now account for 40 per cent of the volume of US equity trading. But many of these ETFs spectacularly fail to provide the expected return if held for more than a very short period – typically more than a day for equity-based funds." There is in principle no upper limit to how many layers can be added. Very large sums can be generated at higher levels, although the conversion of these monies into low-level goods and services is problematic. The illusion is created because they are all designated by the same unit of account – dollars, pounds, Euros – but these nominal amounts can rise so high that cashing them out in the real material world is literally impossible.

Pyramided financial markets have a high degree of social constructedness. Of course almost everything is socially constructed in some way, but some are much more remotely connected to material constraints than others. An army, for instance, has an important degree of social constructedness, especially in combat, where as Napoleon said, the moral is to the material as three to one; nevertheless, an army with five times the size and weaponry of its opponent will almost always win, provided it

maintains some minimal degree of social cohesion. In the world of pyramided financial instruments, the moral – i.e. the interactional processes of the network and its emotional moods – is to the material economy as something on the order of from 6 to 1 (which is the ratio between money loaned out and actual bank deposits), up to quite possibly hundreds or thousands to one in highly leveraged financial manipulations. As sociologists, we need to look at social constructedness not as a philosophical constant but as a set of variations, which can be theorized both in their static relationship to network structures, and in their dynamics of boom and bust over time.

My chief point here is that the more pyramided financial meta-markets are, the more volatile and crisis prone they are, with booms and busts far out of proportion to what is happening in the low-level material economy. But there is an optimistic side as well – optimistic if you would like to preserve capitalism. Financial markets are intrinsically flexible, like giant balloons made out of magic material that can inflate to any size at all. This lends plausibility to the idea that everyone can become a finance capitalist, playing the great game of financial markets. And indeed popular participation in financial markets has grown a good deal during the late 20th century and the early 21st, through employee pension funds, millions of small stock market investors, and speculating through mortgaged home ownership in the Ponzi scheme of the inflationary housing market.

How far can this go? Can it save capitalism? There are at least three drawbacks: First, the inherent volatility of financial markets, their tendency to booms and busts. This has been a long-term historical pattern, ever since the Dutch tulip investment mania in 1637 and the South Sea bubble in 1720. Speculative collapses have been so common that Schumpeter regarded business cycles as intrinsic to capitalism, and their presence a historical marker of the existence of self-driven capitalist dynamics. One could turn the historical argument around; speculative busts have always bottomed out and eventually financial markets have gone up again. Financial crises are in the nature of the capitalist beast, and the historical record suggests that we will always recover from any financial crisis. Again we have an empirical generalization without good theoretical basis. What happens when financial crisis is coupled with structural depletion of middle class jobs, a technological displacement crisis throughout virtually the entire labour force? Can income from the financial sector reach so far that it supplants salaries and wages as the primary source of income for everyone?

There are two subpossibilities here: either everyone becomes a capitalist living off of investment returns; or the financial sector itself becomes the major area of employment – the growth of financial labour. Taking the first of these, it is hard to envision a future in which everyone lives as a financial investor. It takes some initial accumulation of funds for your initial bankroll in order to start investing, the gambling stakes to get into the game. Small investors get started with their salaries, savings, and pensions; but these are just what would dry up under the technological displacement scenario. We are at the theoretical frontier here, and the future of political eco-

nomy may well include things undreamed of in your philosophy, Horatio; but is it conceivable that in the future when everything is automated that entire populations will spend their lives as financial investors, a reserve army of gamblers in life-long casinos? Not everyone goes on making money throughout their investment career; some people lose their investments even in good times, and during a speculative bust many people do. And once they wash out of the speculative market, do they ever get back in, barring gainful employment on their own?

Moreover, financial markets are intrinsically inegalitarian, concentrating wealth in the small number of big players at the top of pyramid. It is precisely the advantage of better networking, insider viewpoint, first mover advantages, and ability to ride out fluctuations better than small players that gives the players in higher meta-markets their capacity to make profits from the medium and small players in lower-order markets. Pyramided levels of monies illustrate Viviana Zelizer's theory that money is not homogeneous but plural, diverse sets of specific currencies circulating within their own social networks. Those who play in the circuit of hedge funds, for instance, are a very restricted group of persons and organizations; small players are not even legally allowed into these markets. Now perhaps this is beside the point; in the idyllic financial utopia of the future, core investors will become mega-rich, but smaller investors will get their share. Will this be enough to sustain consumer spending throughout the entire economy and thus keep the machinery of capitalism going? One suspects a Marxian process will be at work, such that financial markets tend towards ever-greater concentration, driving out the smaller participants at the bottom. As yet we do not know how to prove this; but it deserves most serious consideration.

A further drawback: technological displacement can be expected to make inroads into employment in the financial sector. As I mentioned in the optimistic capitalist scenario, the financial market can prop up an otherwise diminishing middle class either by making everyone a capitalist, or making everyone an employee of the financial sector. Is this latter plausible—when all other work is technologically displaced, financial work will take up the slack? But why should technological displacement not take place within financial employment itself? We have seen a low-level version of this already, with online banking eliminating bank tellers and clerks, and banks downsizing their work forces even as they handle larger amounts of monetary instruments. The mantra of capitalist economists is that unskilled labour is displaced by more highly skilled professionals. But how far can the sector of financial professionals expand? Temporary run-ups such as seen during the 1990s may well prove to be a passing phase; and in any case it is hard to imagine that anything near a majority of workers in an automated future will have jobs as hedgefund managers. Still, this may be the best dream future capitalism has to offer—no one doing any real productive labour, everyone living as a financial manipulator. Maybe we will experience a phase of this, sometime later on in the 21st century; if so I would predict it will be the runup to the last crash of capitalism.

Escape Number 4: Government employment and investment, the Keynesian welfare-state solution. Now we come to escape routes that are not intrinsic to capitalism itself, but salvation from outside. It was widely argued, 50 years ago, that capitalism was saved by the welfare states of the 1930s, 40s, and 50s – the liberal Left saving capitalism when the ideological Right proved incapable of saving itself. Can government spending solve the technological displacement of the middle class?

The main form of direct government hiring has been middle class administrative jobs; thus any continuation of the trend to automate and computerize such jobs would contract government employment too. A sufficiently resolute political regime could resist this by refusing to automate jobs away; nevertheless this kind of neo-Luddite policy seems likely to invite satirical denunciation [to get an idea of this, check out the 1959 Peter Sellers film, *I'm All Right Jack* – which is about British trade unions at the height of their power]. Staying technologically backwards for the sake of protecting employment would probably be demoralizing and politically unviable. Another version which has worked in the past has been military Keynesianism, the buildup of employment in military forces along with stimulating the economy through military production. But the contemporary military has gone high-tech, promoting transformation into smaller fighting forces coordinated by computers, satellites, aerial sensors, and remote control surveillance and targeting devices. The military is the leading edge of robotization, and it is doubtful that even a World War-style all-out mobilization would ever produce the kind of massive militaries seen in the 20th century.

Besides direct government employment, there is government spending, the favorite tool of today's stimulus packages. Most of those invest in material infrastructure – roads, bridges, airports, energy, as well as the so-called information highway. But these areas too undergo computerization and automation, adding to the trend of technological displacement. Even less likely to stem the tide of job displacement is government investment in the private sector. Especially with the mantra to carry out such investments efficiently, government assumes the role of capitalist or at least capitalist overseer, all too willing to cut labour costs, and therefore to cut employment.

Another version of market intervention is regulation of the private marketplace, mandating a shorter work week, and protecting jobs from cuts. These policies have been widely practiced by Continental states, but have not done much more than slow the drift to technological displacement. On the whole, such policies tend to protect existing job-holders, but to freeze out youth. That problem could be solved by government deliberately hiring youth in massive numbers; this has rarely been attempted [except in the military version], although in *Escape #5* I will suggest that this has been done surreptitiously through inflating educational credentialing.

In principle, political policies could do anything whatsoever, constrained only by political will, which is to say mobilized political power and its vision as set by political cultures. Obviously political cultures have a long way to go from here if the state is going to do anything significant about technological displacement of the middle class. I am not saying that mixed “liberal” government policies propping up

the private economy won't keep capitalism from limping along quite a way into the future. But the mixed approach is not likely to solve the longterm problem of technological displacement, as long as private profit-making drives the economy.

Escape Number 5: Educational credential inflation, and other hidden Keynesianism. Credential inflation is the rise in educational requirements for jobs as a rising proportion of the population attains more advanced degree. The value of a given educational certificate or diploma declines as more people have them. In the US, high school diplomas (i.e. 12 year secondary school) were comparatively rare before World War II; now high school degrees are so commonplace that their job value is worthless. University attendance is now over 60% of the youth cohort, and is on the way to the same fate as the high school degree. The main thing that inflated degrees are worth is to plough them back into the educational market, seeking still higher degrees. This in principle is an endless process; it could very well reach the situation of the Chinese mandarin class during the later dynasties, when students continued sitting for exams into their 30s and 40s— only now this would affect the vast majority of the population instead of a small elite. Different countries have gone through educational inflation at different rates, but from the second half of the 20th century onwards, all of them have followed this path.

Educational degrees are a type of currency of social respectability, traded in for access to jobs; like any currency, it inflates prices [or reduces purchasing power] when autonomously driven increases in monetary supply chase a limited stock of goods, in this case chasing a diminishing pool of middle class jobs. Educational inflation builds on itself; from the point of view of the individual degree-seeker, the best response to its declining value is to get even more education.

Although this is the primary mechanism of educational expansion, it is bolstered by prevailing technocratic ideology. Rising technical requirements of job drive out unskilled labour, the argument goes, and today's high-skilled jobs demand steadily increasing levels of education. Thirty years ago, in my book *The Credential Society* [Collins 1979], I assembled evidence to show that technological change is not the driving force in rising credential requirements. The content of education is not predominantly set by technological demand; most technological skills— including the most advanced ones — are learned on the job or through informal networks, and the bureaucratic organization of education at best tries to standardize skills innovated elsewhere. In updated research on credential inflation vis-a-vis technological change [refs...], I have seen nothing which overturns my conclusions published in 1979. It is true that a small proportion of jobs benefit from scientific and technical education, but that is not what is driving the massive expansion of education. It is implausible that in the future most persons will be scientists or skilled technicians. Indeed, the biggest area of job growth in rich countries has been low-skilled service jobs, where it is cheaper to hire human labour than to automate.

Although educational credential inflation expands on false premises — the ideology that more education will produce more equality of opportunity, more high-tech

economic performance, and more good jobs – it does provide a solution to technological displacement of the middle class. It does this by keeping more people out of the labour force; if students receive a financial subsidy, either directly or in the form of low cost (and ultimately unrepaid) loans, it acts as hidden transfer payments. In places where the welfare state is ideologically unpopular, the mythology of education supports a hidden welfare state. Add the millions of teachers in elementary, secondary, and higher education, and their administrative staffs; the hidden Keynesianism of educational inflation may be said to keep virtually the capitalist economy afloat. There is the danger, of course, of technologizing education, displacing teachers with computers; if this were to proceed far, education would be less of an escape from technological displacement. Barring this, is continued educational expansion a likely route to a Keynesian solution to technological displacement?

Educational is a major cost of government, and this tends to limit future expansion. With higher costs, there are pressures to privatize, shifting the burden of funding to students or parents; but this too faces a limit as the middle class is economically squeezed. An expanding educational system driven by credential inflation reaches a potential crisis point within the educational system itself. This is not necessary final. One can envision a series of such plateaus, stopping and restarting as our secular faith in salvation through education goes through disillusionment and revival.

This affects ourselves particularly, as university teachers. Even though the educational system is based on false premises, I felt badly about publishing my critique of educational inflation, since most of my colleagues depend on it for jobs. After finishing my 1979 book, I actually quit the university and became a fulltime writer; but teaching is more remunerative, and now I'm back. Everything has to draw its resources from somewhere, and that is true for the existence of sociology itself. Ironically, sociology exposes the false premises which ideologically protect its own material base. Would mass political opinion continue to support education if it did not have utopian beliefs about it? Perhaps, one of these decades, we shall see.

Finally, the denouement. Where is it all tending? I have stressed that this is not a theory of revolution but a theory of crisis. If crises of technology displacement get bad enough – a highly automated, computerized world in which very few people work, and most of the population is unemployed or competing for menial lowpaid service jobs – would there be a revolution?

Here we must leave economic crisis theory and examine theory of revolution. Since the 1970s, the theory of revolution has been revolutionized. Theda Skocpol, Jack Goldstone, Charles Tilly, Michael Mann and others, by their comparative researches on the rise and fall of state regimes, have established what can be called the state breakdown theory of revolution. Successful revolution starts at the top, not from disaffected and impoverished masses from below. The chief ingredients are: first, a fiscal crisis of the state; the state becomes unable to pay its bills, and above all to pay its security forces, its military and police. State fiscal crisis becomes lethal when it is

joined by the second ingredient, a split among elites over how to deal with it. We could add secondary factors, back in the chain of antecedents, typically although not always including military causes; a state fiscal crisis often comes from accumulated military expenses, and elite deadlock is especially exacerbated by military defeat, which delegitimizes government and provokes calls for drastic reform. Splits among elites paralyze the state and open the way to a new coalition with radical aims. It is into this power vacuum – what social movement theorists now call the political opportunity structure – that social movements are successfully mobilized. Often they do so in the name of grievances from the bottom, but typically such radical movements are led by upper-middle class fractions with the best networks and organizing resources. As Tocqueville recognized long ago, the radicalism of a movement is not correlated with the degree of immiseration; exactly what does determine the degree of radicalism is more in the realm of the ideological and emotional dynamics of exploding conflict, although just how to theorize this remains unfinished.

To reiterate: virtually all known revolutions, up to this point in history, have come not from economic crisis of capitalist markets, but from government breakdown; there is fiscal crisis in the government budget itself, but this is usually independent of major crisis in the larger economy. This means revolutions can continue to happen in the future, through the narrower mechanism of state breakdown, the state-centered fiscal crisis, elite deadlock, and ensuing paralysis of state enforcement apparatus. State crises are more frequent than full-scale economic crises. What happens when we put this in the context of the longterm trend to technological displacement of the labour force? Several things are possible: revolutions can happen in particular states, not necessarily those with the greatest amount of technological displacement. Or, revolutions can happen that do not act on a policy of solving technological displacement. But also, revolutions can happen which do take an explicitly anti-capitalist turn.

Since history is driven by multiple causes, the future is like rolling multiple dice, as in the Chinese game Yahtzee – waiting, let us say, for sixes to come up on all five dice simultaneously. Thus we could have the general anti-capitalist revolution some time in the future, through the right combination of state breakdown, perhaps with war defeat, plus the omnipresent technological displacement.

Alternatively, technological displacement may become so obvious and refractory that a political party might win electoral power on an anti-capitalist program. I am not sure how to judge the chances of this happening – perhaps less than the chances of rolling sixes all the way around.

Will the anti-capitalist revolution be the end of history? Certainly not. It will not eliminate politics. Even if it is socialist, it likely will not end economic inequality. Past experience with socialist regimes shows they have cut the level of inequality by about one-half – compare Gini coefficients of socialist and capitalist societies, and the drastic increase in inequality after the downfall of the USSR.

Will the anti-capitalist revolution make people happy? Durkheim argued that the level of happiness in human history is always about the same; new situations create new desires and new levels of comparison. And in any case, conflict seems intrinsic to human organization. One thing we have learned from the history of socialist regimes in the 20th century is that they have their own struggles, and that we should not expect too much from them. Chiefly they have the merit of not being capitalist, the merit of escaping from capitalist crisis.

I would not even predict that anti-capitalist regimes would be permanent. It is quite possible they themselves will change, either through electoral shifts, or future revolutions another 50 or 100 years down the road. I see no deep reason why socialist regimes should be more peaceful than capitalist ones; as Max Weber argued, all organizations of state power strive for power prestige, when opportunities in the world-arena exist; and the military-expense path to revolution can be repeated again – in fact it was what brought down the USSR. [Collins 1999] Far from the end of history, future centuries may well see a series of oscillations between capitalist and socialist forms, and perhaps others as yet unenvisioned.

Turning back to the most imminent crisis, our current trajectory towards technological displacement of the middle class: How long into the future is this projected? I don't think the fullscale crisis will be here before the next 20 years; but our descendants ought to be surprised if it does not happen by the second half of the 21st century.

There are of course a host of other processes and problems that will complicate the future: ecological crisis, aging populations, explosion of medical costs, huge intercontinental migrations, ethnic and religious conflict and violence, perhaps new gender and sexual preference conflicts. To keep the focus on the central point here: how will these affect the technological displacement crisis? Some of them will exacerbate it; some of them add pressures for state breakdown and thus raise the chances of revolutions, the rolling of multiple sixes on the dice. Will any of these turn back technological displacement, increasing middle class employment, creating new jobs to offset automation and computerization? Some of them may, but to what degree? I see no well substantiated theory – indeed, hardly any well-reasoned theory at all, to suggest that we will evade the technological displacement crisis looming sometime in this century.

I could be wrong. Believe me, I am not wishing for a crisis of this magnitude, just in order to be true to Marx. What I have argued is put together from what sociologists have learned in the century that we have been in existence as a discipline. I am certain that the chief alternative theory, the technocratic utopia, is quite wrong; it comes from the pre-history of sociology, the dream of Saint-Simon, back in the 1820s. The lineage from Marx, Weber, Durkheim, and Simmel, and their further continuation by such as Skocpol, Tilly, Mann and many others, has given us a more hard-nosed, realistic way of seeing the world. Clearly we have not seen enough. But we have something to stand on; further generations of sociologists have serious work to do, and will see better than we have.