

On Paul Mason's 'Post-Capitalism' – An extended review
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Part 3: The Non-Stalled Kondratiev Wave

Introduction

In the last part of this extended review, we concluded that information capitalism is perfectly possible, both in the abstract, when properly understood, and given more substantive empirical evidence regarding recent trends.¹ In this instalment, we turn to the other key element of Mason's argument: that the longer-term periodicity of the global capitalist economy from which information capitalism may emerge is broken, auguring imminent replacement of capitalism with something else: post-capitalism.

In critically evaluating this argument, we will again substantially follow Mason's line of argument, including his use of both the 'long wave' theory of Kondratiev and his pleasing Marxian twist on this. But we will offer a synthesis of these theories that is different in important respects. This approach not only offers an account of the historical record with more explanatory power in its own right, not just eliminating but, in fact, explaining several important gaps and anomalies in Mason's theory. But it also offers a more succinct and persuasive interpretation of the evidence that Mason himself presents. In brief, we argue that this shows, to the contrary, that both the K-wave, as the in/out breath of capitalism, and hence the capitalist system itself are alive and kicking, albeit in one of the periodic paroxysms of profound renewal.

But this is neither cause for triumphalist complacency nor radical defeatism. We are not yet vying for the end of capitalism and what follows it. Yet much is still at stake and up for grabs, both in the short/medium and longer term. Prophecies of imminent capitalist demise, however, ironically distract from all this, even as they are conducted in the name of political radicalism: a trap that Mason perspicaciously describes in the history of Leftist thought, but must now himself avoid.

What does Mason argue? 'Marx-izing' Kondratiev

Let us first reconstruct Mason's argument. The conclusion is that the most recent Kondratiev (or 'K') wave of the global capitalist economy was supposed to have expired, according to the historical periodicity thus far, in the late 1980s/early 1990s. However, it did not. Instead it has been unnaturally extended, and so what should have happened, of a next K wave emerging, has not. The next K wave promised to be based on information capitalism, which Mason argues has not emerged for the simple reason that it cannot.

Together, then, the undead extension of the last K wave and the failure of a new one to emerge then explains the general pervasive stagnation across the global economy today, and now with not just the wealthy global North but other 'emerging markets' of the global South also showing increasing economic malaise. There is just no growth left in capitalism. Hence

¹ My apologies to readers who have been waiting for this next instalment for some time – and my thanks to those whom have been kind enough to get in touch to ask about it. But here, finally, it is.

we are witnessing – and armed with Mason’s theory now can *explain* – the demise of the cycle per se, and with it the replacement of capitalism by something else.

I have dealt previously with the argument regarding the impossibility of the emergence of information capitalism (see Part 2). But what about the argument that the present is a period of anomaly in the cycles or ‘waves’ of the growth of global capitalism thus far? Taking the criticism of Mason’s account one step further here, we show that, to the contrary, information capitalism is not only theoretically possible, and empirically conceivable given current trends, but also highly likely, if not the *most* likely outcome (in some form) of the present malaise. And, indeed, where the global turbulence of the present and near future will be *constitutive* of information capitalism not evidence of its fated still-birth. To see this, let us first consider how Mason reaches the opposite conclusion.

At the core of his argument is a compelling (but incomplete – see below) synthesis of the long cycle theories and observations of Kondratiev (in early twentieth century Russia) and a judicious selection of fundamental insights of Marx. Mason here makes a number of important points. First, he marshals recent evidence (e.g. Korotayev & Tsirel 2010) that the periodicity of K waves in global growth data is now strongly corroborated. This establishes the K wave as, indeed, an important rhythm to capitalism – and one of evident relevance to the domain and purpose of his broader argument. The rhythm appears to follow a fairly steady cycle or around 50/52 years, with apparently two peaks around the middle of the cycle.

Secondly, Mason is emphatic, and convincing, that a (neo-) Schumpeterian interpretation of K waves as reducible to the rise and fall of specifically enabling (sets of) innovations (or, worse still, just ‘technologies’, as in ‘general purpose technologies’ (GPTs)) is both a grievous misreading of Kondratiev’s work itself and littered with problems, both theoretical and empirical (such as accounting for the historical record without numerous ad hoc additions) (see e.g. p.46; also Tyfield 2016). K waves must instead be understood as a much broader economic phenomenon, namely the ‘long-term rhythm of the profit system’ (p.77).

In arguing thus, Mason ‘Marxizes’ K waves by drawing on the law of the tendency of the rate of profit to fall (LTRPF) – ‘the fundamental law of capitalism’, as he quotes Marx (p.52) – and, no less importantly, its multiple counter-tendencies. On Mason’s account, the counter-tendencies take the form of specific socio-political settlements and new forms of exploitation that together strongly resemble what Harvey and Jessop (differently) describe as spatio-temporal fixes or what Regulation Theory sees as regimes of accumulation.

The K wave is thus the emergent periodicity of this complex systemic formation in its emergence, ecological domination, maturity and decline – with all the concrete ‘meso-level’ specificity this means in each historical case. Moreover, what this reading allows is a *constitutive* role in this key dynamic of capitalism of the resistance to its growth, most obviously in the form of the working class and class struggle. This is in striking contrast to neo-Schumpeterian theories, like Perez’s, which admit politics but only as epi-phenomenon to cycles driven primarily by technology (and the financing needed for investment in their development and deployment). Altogether, then, this is an insightful re-reading of K waves.

The significance of this interpretation for Mason’s more substantive argument, though, is that it allows him both to argue that, and to explain how, the present is a period of anomaly in this cycle. For one particularly important role accorded to the working class in this schema is their essential role in *resisting* capital’s attempts to foist the troubles of a downswing on their

backs through redoubled and novel forms of exploitation. As Mason puts it, only this resistance can *force* capitalists to seek out the more laborious routes of escape from a downturn in new innovations (which are not just technologies), and hence industries and firms that can enable a new upswing; where this upswing fundamentally takes the form of rising – not austerity-squeezed and falling – wages.

Yet, he argues, the resistance that would have been needed to finish off the last K wave and catalyse a new one was crushed this time round. This meant capitalism was not forced to ‘innovate out of the crisis’... But this simply extended the party for a little longer, while sailing SS Capitalism into waters where it would face even bigger icebergs. As such, capitalism’s implosion has what, for some, will be a pleasingly dialectic twist, even if it is an inversion of the Marxian epigram of the working class as the ‘gravediggers of capitalism’: it is the very *success* of neoliberalism in its fundamental political project of *destroying* the working class that condemns capitalism to its own demise.

Coinciding with both the domination of neoliberal governments in the capitalist core and the collapse of ‘real existing socialism’, what should have been the end of the K wave around 1990 instead was a period of capitalist triumphalism (the ‘end of history’, no less!) and unprecedented and sudden working class weakness. On the one hand, then, this afforded a ‘sugar rush’ to the existing K wave, unnaturally extending it beyond its due date of death. But, on the other, this also engendered the still-birth of the next K wave. The result is the inevitable winding down of the former and the continuing absence of the latter. Mason then draws on an informative and well-selected set of graphs that purport to show the break in the cycle across multiple metrics (see below).

So capitalism is passing. But it still needs gravediggers. The working class have gone, but – in a final twist – Mason argues that they were never cut out for the role anyway! Here he does an admirable analytical job of exposing the fallacies and idealist misreadings of the working class and their aspirations by radical Left intellectuals. A profound revision of Leftist shibboleths is called for, he concludes. And the gravediggers of capitalism are not ‘the working class’ – for which read white, Western men in their working lives – but *everybody* in *all* aspects of their lives and, indeed, in their ‘humanity’.

There is much in this account to cheer:

- The insistence on the specifically *capitalist* nature of the K wave, and hence for *political* economy and class to feature centrally in its explanation, and the critique of accounts that leave this out.
- And conversely the insistence on the importance of this particular periodicity as a key insight into capitalism and political economy, and hence the key political questions of our time.
- The unrelenting but sympathetic criticism of Leftist political economy and call for its reimagining.
- The allusion to and use of complex systems terminology, and the insistence on the primary importance of ‘meso-level’ theorizing and analysis.
- And the compelling insight that it is humanity (or perhaps, amidst the Anthropocene and multiple forms of innovation, a *post*-humanity) that must be focused on the appropriate subject of any new ‘socialism’.

But notwithstanding these points of contact, we will now focus on a similar and sympathetic re-reading of material Mason uses, both theory and evidence, that reaches very different

conclusions. And particularly on the key point of where we are now and where we are heading – as the key matter of orientation of political strategy – and what opportunities and limitations are there, in the short and longer terms. In brief, the opportunity for the Left (a global, cosmopolitized, intersectional Left) is to shape profoundly the next emerging regime of capitalism with a longer-term view to moving beyond capitalism altogether. Or to be briefer still, I agree with Mason that *neoliberalism* is collapsing, but this will renew, not destroy, *capitalism* in the process in the medium-term.

The argument first retraces the theoretical argument about K waves and how best to understand them, before turning to the key question of ‘where are we now?’, drawing on the same evidence that Mason presents. Then we conclude.

What is the K wave?

With so much riding on the theoretical construct of the Kondratiev wave in Mason’s argument, it is clear that knocking this pillar out would bring the whole edifice crashing down. I have no intention to do that, as I hope to have made clear. As such, while the Kondratiev wave per se and Kondratiev’s specific explanation of them have both received much criticism over the years, I do not propose to rehash those criticisms; and, indeed, I will rebut some of them. Rather, my purpose here is to point out some holes in Mason’s broadly insightful theoretical schema so as then to make it *stronger*; and stronger, in particular as a *strategic* guide for a renewed Left politics.

We start then by accepting the evidence he calls on to establish the K wave as a striking rhythmic feature of the dynamics of the history of capitalist global growth. While multiple explanations underlying this periodicity have been tested and found wanting – not least of which is the rather simplistic ‘general purpose technology’ theory (see e.g. Crafts 2005, Ristuccia & Solomou 2014, to which evidence we will return) – the brute fact of this pattern remains. Failure to explain it to date, therefore, is a call to explanatory arms rather than to down tools.

Indeed, empirical disproofs of GPT theory not only disprove a technocentric reading of K waves that Mason himself rightly rejects, but may be seen as simply the *reductio ad absurdum* and determinate negation of all explanations of the K wave attempted in purely techno-economic terms. Yet it is also still the case, surely, that a complex cluster of innovations remains a key element of the techno-economic phenomena at play in the K wave; as indeed they are in Mason’s own argument, especially in the role he accords to ICTs in the *failure* of the next K wave – as information capitalism – to emerge.

With this in mind, there are two steps up we must take from here to reach a different ledge from which to look anew at Mason’s theory, albeit having climbed the same mountain and taking similar paths. In both cases, these steps are compelled by problems with K wave theory, including Mason’s take on it. First, we need to consider the K wave itself and the dynamics of its rise and fall. And then we need to consider some of the most problematic gaps in its account of the historical record, this then leading to a resituating of K wave theory *alongside* a second, related but distinct approach.

Regarding the first step, we start not by attempting to ‘prove’ the existence of the K wave, but by taking its brute facticity as now demonstrated albeit still puzzling and unexplained. From here we must consider the definitive negations, both theoretical and empirical, of many

of the most high-profile explanations of the K wave rhythm. In particular, it is clear that the K wave is not and cannot be explained in terms of technologies alone. Yet it is also still a clearly techno-economic rhythm. Mason nicely squares this circle by reminding his readers that the ‘economic’ is always *political* economic, as explained above. Moreover, technologies enter the picture as novel *clusters* of technologies that afford new horizons of capitalist business, and so exploitation for accumulation. These are important additions to the explanation, but they can be developed further if we are prepared to move beyond ‘political economy’ (i.e. class struggle) as being treated as foundational.

On this account, these clusters of ‘technologies’ and broader dynamics of ‘innovation’ are seen as irreducibly *socio-political* phenomena. They are thus key mediations in positive and negative feedback cycles of empowerment and disablement of specific and (possibly new, emergent) socio-political constituencies. This undoubtedly *incorporates*, but is not exhausted by, class struggle, including in its manifestation as everyday micro-politics of the workplace. As such, this account thus also *connects* politics to ‘technology’ and the dynamic processes of their co-emergence in clusters in ways that remain opaque in Mason’s. In short, if the historical evolution of capitalist societies cannot be reduced to purely techno-economic developments, neither can it leave these aside. For, insofar as they are reconceptualised as *themselves* specifically socio-political, they remain crucial (but *not* ‘fundamental’). A relation to broad clusters of new (power/knowledge) technologies that (promise to and/or) are demonstrably transforming capitalism is thus reinserted back into the centre of the analysis.

Moreover, shifting from a techno-economic to a political economic account is crucial for responding to a key challenge the former, namely ‘what explains the eventual demise and downswing of the K cycle and its timing?’ If the upswing is explicable in terms of a deepening and self-propagating growth of a new cluster of technologies and the opportunities for productive investment amidst the decline of the previous cycle, the question remains of ‘how and why does this momentum peak and then unravel?’ ‘Why does it not simply carry on, rolling into ever new innovation and growth?’ Or, conversely, ‘why is there *regularity* in the downswing, rather than this reflecting the particular contingent characteristics of each (cluster of) ‘GPT(s)’?’

In one sense, shifting to Mason’s political economic account offers a straightforward response. By going beyond purely techno-economic considerations to issues of political empowerment and acceptance, and with capitalism as a system existentially dependent on constant growth, decline becomes explicable in terms of the opportunities for productive and relatively uncompetitive accumulation reaching their limits and then turning to gradually diminishing returns. Within any finite given political-economic-geographical ‘space’, one can readily see that such a limit will indeed necessarily always be reached by a system premised on endless and accelerating growth.

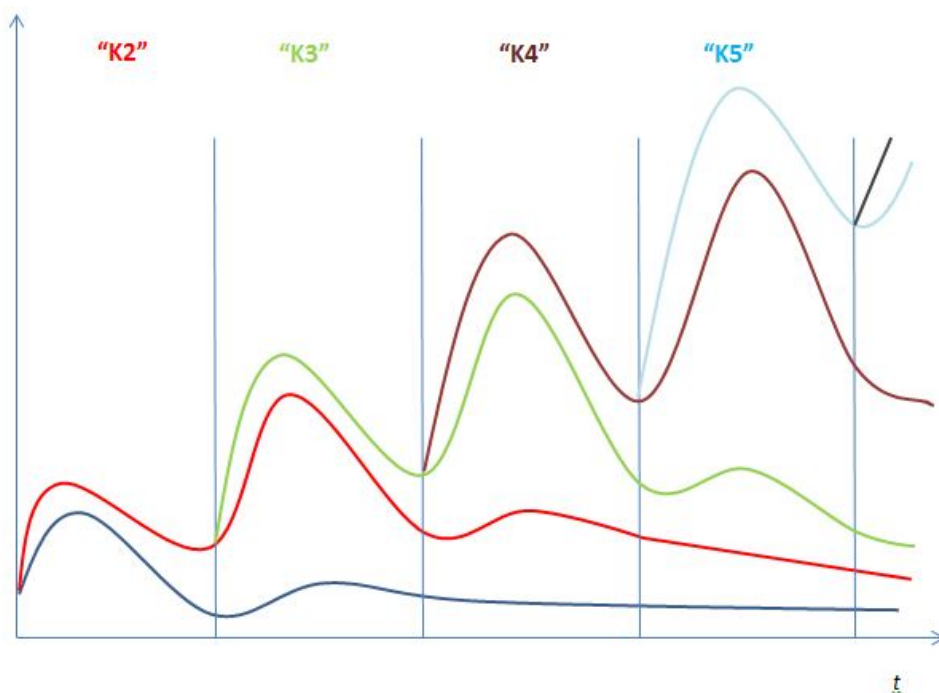
But here we encounter a converse problem in terms of how this interacts with the cluster of innovations and technologies characteristic of a particular K wave. The careful economic historical work that has debunked the GPT theory clearly shows that steam and electricity were very far from exhausted by the time of the downswing of ‘their’ K waves, and indeed attained maximum impact on economic growth well into the *next* K wave. It is clear, therefore, that the ‘exhaustion’ underlying a K wave downswing is certainly *not* that of the effect of (cluster of) technologies associated with its upswing. Yet K waves do have a clear and fundamental technological aspect.

But we are not back where we started, with a periodicity apparently related to novel clusters of technology but for which no such relation can be empirically found. Rather, the findings of economic historical work can be readily incorporated into our understanding of the nature of the K wave – and in a way that leads to further significant insights (below). This is the first tweak to the Mason schema. For the findings that these ‘GPTs’ had their biggest impact on economic growth in the *following* cycle opens up a new explanation that, while admittedly speculative, is not only compelling in its own right but deals with many of the issues discussed, including providing an immanent dynamic of rise and fall that builds on Mason’s argument; insights that are all the more persuasive when the concept of GPT is opened up into a *cluster of power/knowledge* technologies, as above.

In short, then, we have a K wave pattern characterised by persistent and durable clusters of innovations over *many* cycles. While a K wave is most readily identified as characterised by the *new* cluster of technologies, in fact this cluster is merely emergent and taking shape in that period. Instead, and following these empirical findings, it reaches its greatest significance in the *following* wave. *Ex hypothesi*, it also follows that the cluster of technologies of greatest systemic significance during ‘its’ eponymous K wave is that which is generally associated with the *prior* wave.

This then immediately deals with the objections regarding the minimal impact of GPTs in the periods to which they are generally accorded greatest significance, while accepting this follows at a later date. Moreover, the clusters of technology do not simply pass from the world even at the end of their second cycle. Rather they persist – as in Edgerton’s ‘shock of the old’ – but with systemic impact on economic growth (and indeed socio-political change) that is now swamped by the impact of subsequent clusters of technology. Against discrete cycles of one cluster after another, therefore, we have a pattern of deepening over-layering and of increasing complexity of interaction amongst these clusters, as in Figure 1.


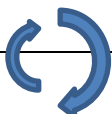
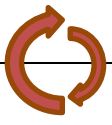

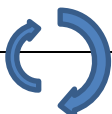


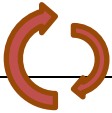






Figure 1: K Waves as Compounding Innovation Clusters over Multiple Cycles



Understanding the K wave in this way can then explain the rhythm of rise and fall, and introduces interesting reflections on the dynamic itself regarding the interaction and interdependence of the distinct clusters of technology. And it does so in ways that are compatible with, and develop, Mason’s approach. As regards the former, a cluster of technologies takes on a dynamic that is constitutively relational with that of other clusters. As such it cannot be understood purely in terms of the fortunes of specific isolated (clusters of) technologies. This dramatically reframes the cycle as a whole – and, indeed, the challenges for empirical testing that this account will need to pass (in due course).

First, we see that the dynamic is no longer a simple dyad of rise and fall, but is a more complex process of interaction across the dominant clusters of different cycles (Table 1). This produces a process involving at least six clear stages, with four of these the ‘proper’ cycle of a specific cluster that has systemic significance. Moreover, the dynamic associated with each cluster is unintelligible absent their interaction with the clusters preceding and following them.

Table 1: The Interaction of Clusters Across K Waves

<i>Cycles</i>	“ K_{N-1} ” cycle Downswing	“ K_N ” Upswing	“ K_N ” Downswing	“ K_{N+1} ” Upswing	“ K_{N+1} ” Downswing	“ K_{N+2} ” Upswing
<i>Cluster</i> K_{N-1}	Consolidation & Domestication 	Mass Roll-out 	Maturity & Decline 	Persistence but Diminished Systemic Significance	Persistence but Diminished Systemic Significance	Persistence but Diminished Systemic Significance
<i>Cluster</i> K_N	Early stage R&D 	Emergence 	Consolidation & Domestication 	Mass Roll-out 	Maturity & Decline 	Persistence but Diminished Systemic Significance
<i>Cluster</i> K_{N+1}			Early stage R&D 	Emergence 	Consolidation & Domestication 	Mass Roll-out 
<i>Cluster</i> K_{N+2}					Early stage R&D 	Emergence 

Hence, following early stage breakthroughs in R&D (of increasing sophistication from cycle to cycle in a cumulative and historical path-dependent process), a cluster first definitively emerges in parallel with the embedding and mass roll-out of the previous cluster. This raises interesting questions about the relation and interdependence, in both directions, between these two processes.

On the one hand, it is the mass roll-out of the previous cluster that is actually the quantitatively dominant driving force in the new wave of accumulation that characterises the upswing, not the emergent technology that seems to grab the headlines. Yet the latter is hardly irrelevant or mere epiphenomenon either. Rather, like the icing and the cake, this relationship seems to suggest that successful mass deployment of the previous cluster and emergence of a new ‘horizon’ of productive investment are intimately interactive and parallel

processes, feeding off each other in self-sustaining positive feedback loops; as, for instance, in the combination of organic chemistry (K3) and internal combustion engines (K4) that make the automobile.

This relationship, however, is quantitatively asymmetric, given the greater systemic dominance of the phase of mass roll-out. As a result, it is the (inevitable) exhaustion of the *latter* – in Mason's terms of political economic growth to the limits of the existing socio-political system – that dominates the cycle at this point: this *is* exhaustion of *that* cluster's impact on economic growth as empowerment-to-system-dominance, calling for a renewal of social relations/regularization regime, but one cycle later than we would otherwise be searching for it. Moreover, this progressively flips the subsequent cluster into a new phase in which its positive feedback relations with the prior cluster pass from productive to increasingly antagonistic. Here, in short, the new cluster is increasingly growing beyond the limits of what has been its accessory role at system level, while simultaneously the dominant cluster is itself increasingly exhausted.

This reading of the cycle, then, can not only explain why there is a downswing at this moment (i.e. it is, indeed, *not* the exhaustion of the new K cluster), but also suggests what *is* happening to this new K cluster during this phase in ways that are otherwise missed or mistaken: namely that it is not itself in decline, but is likely growing quantitatively *and changing* qualitatively. Specifically, as a new cluster of *power/knowledge* technologies, it will inevitably transform power relations, raising new and challenging predicaments for 'regularized' capital accumulation, that can only be dealt with in concrete through the contested formation of new socio-political settlements. This is thus a phase of consolidation and domestication of that cluster, not shrinkage or stagnation. And as this process unfolds, eventually three phase shifts (can) take place in interactive parallel: the new settlement emerges, allowing mass roll-out of *this* cluster (K_N) in turn; whereupon this cluster can assume dominance from the previous one (K_{N-1}), while it continues to implode and stagnate; and a new cluster (K_{N+1}) definitively emerges from *its* early stage R&D.

Finally, this account also offers an explanation of the persistent dynamic of upswing, not just downswing. First, it preserves the Marxian insight, drawn on by Mason, that an upswing – a renewal and expansion of the dynamic of capital accumulation – is a system imperative, and one manifest through the multiple, uncoordinated pursuit of profit by private agents. This is thus the fundamental drive to the continual, restless search for new innovations; innovations that will revolutionize again the means of production and thereby furnish a systemic apex or forefront of investment necessary for continued systemic expansion. Moreover, this is a dynamic of a *political economic system*, in which control of *and dominance through* these new power/knowledge technologies by capital is a key means of preserving and constructing anew conditions amenable for relatively regularized exploitation for accumulation. And hence there is also always a dominant cluster in place, the baton never being dropped on pain of systemic collapse.

Finally, this essentially interactive process also suggests that one cycle is always interdependent with others. Indeed, each cycle seems to need the dominance of the previous one to become cemented, and then the emergence of the next one to reach its fruition. This

leads to further interesting questions about why this is the case, expanding the necessary research programme around the K wave as product of capitalism as a complex systems.²

In short, what does seem still compelling is that the K wave is an emergent, if still-to-be-fully-explained, rhythm of capital accumulation, just as Mason argues; and one that is *both* constitutively political and contested *and* with a crucial role for clusters of new technologies and innovations. Taking this first step, however, we have had to build on Mason's argument, taking an approach that is crucially different in framing. In particular, we argue here that the complex system to which Mason alludes is fundamentally one of *power/knowledge relations* and their dynamic co-production and mediation with changing power/knowledge technologies, via diverse forms of agency and social practice. Our object of study is thus fundamentally a system of strategic power relations, not of the production of value and class exploitation, where power is understood to be productive and constitutive, dynamic and dispersed, normatively ambivalent, and manifest always and only in specific forms.

This is not the place to go into this conceptualization in depth (see e.g. Tyfield et al. 2015). But the key points for present purposes are that framing this analysis in these terms situates agents within multiple dynamic systems that may themselves be inter-dependent and interactive. There are thus no 'fundamental' levels of analysis here. In particular, the 'strictly' political economic systems – of class struggle and exploitation – that constitute 'capitalism' are not taken as fundamental, and are understood to be situated, irreducibly and interdependently, in the much broader and 'bigger' systems of the socio-cultural and political regularization of everyday 'modern' life and the global architectures of hegemony respectively – which, vice versa, are not independent from the (systemic and concrete) dynamics of capital accumulation. So this is not, of course, to say that these familiar Marxian concerns are not themselves 'real' or don't matter. To the contrary they are real and significant precisely *because* they are ontologically relational.

This opening up of the theory may seem to invite unnecessary complication (not just complexity – a different thing) into the analysis. But as we show below, it also produces significant insights and clarifications. In particular, from this perspective we are forced to distinguish between the processes of the K wave and those of a second rhythmic that are too often conflated into the K wave. Indeed, Mason himself does to a significant extent conflate these dynamics with the K wave, even as he explicitly considers and then dismisses them as too 'high level' for his purposes. But they are better conceptualized as emergent and distinct: our second step. This rhythm has been best described in the works of Giovanni Arrighi, following the magisterial histories of Fernand Braudel; and we will hear designate them as Arrighi-Braudel (or A-B) cycles.

² One possibility is stimulated by the substantive historical sequence of these clusters, which (as crudely summarized as "the factory system – steam – electricity – oil – ICT") suggests a sequence of clusters that are primarily novel forms of information (communication and management) and energy, one after the other. This would then resonate with the emerging scientific literature on complex social systems (e.g. van der Leeuw 2012), precisely in terms of these two key aspects of social organization, as the two faces of social negentropy. Perhaps, therefore, capitalism has expanded through a sequence of new systems of information and energy, each expanding and then reaching its limits before the other must itself be innovated to maintain system dynamism and vitality. If so, this would suggest that the next K wave must be a new 'energy' wave – surely both a credible and a welcome prospect, given the urgency of moving beyond fossil fuels. Though the process described above would suggest that mass roll-out of these energy technologies would not follow until the K wave *after that*, i.e. well into the latter half of the century, at the earliest.

These cycles describe the rise and fall of specifically capitalist hegemonic regimes, centred on cores of growing scale and reach and economic heft, stretching back even to the 1200s: the Italian city states (Venice then Genoa); the United Provinces of the Netherlands; Great Britain; and most recently the United States. Moreover, the specifically capitalist nature of these hegemonies plays out in terms of two distinct and clearly identifiable sub-cycles in each case; sub-cycles that demonstrate the still-intensively capitalist nature of these (geo)political cycles.

First there is a period of strong growth of a new system of productive capital. Then as this system reaches its limits, there is a ‘signal crisis’ and a shift to (or rather re-emergence of and ‘return home to’) finance as the pre-eminent sector of the economy: an economic *and political* financialisation. This revitalizes growth and evinces a further profound reshaping of capitalist society in the interests of contemporaneous finance capital. Yet this too reaches its limits, and then ensues a generation during which the political resistance to the hegemon systematically exceeds the capacities of the existing system to control them, but a new hegemon has not yet emerged. The emergence of a new hegemon, however, is *forged* in the fiery chaos of this period of turbulence, making what was previously unthinkable into ‘common sense’. And as a new, hard-won settlement takes shape this is co-produced with a new deepening of conditions supportive of a new upswing of productive capital, as a class centred on, dominating and constitutive of the new global hegemon. We will designate this cycle as: MC, CM’ and ‘turbulence’ or ‘reset’.

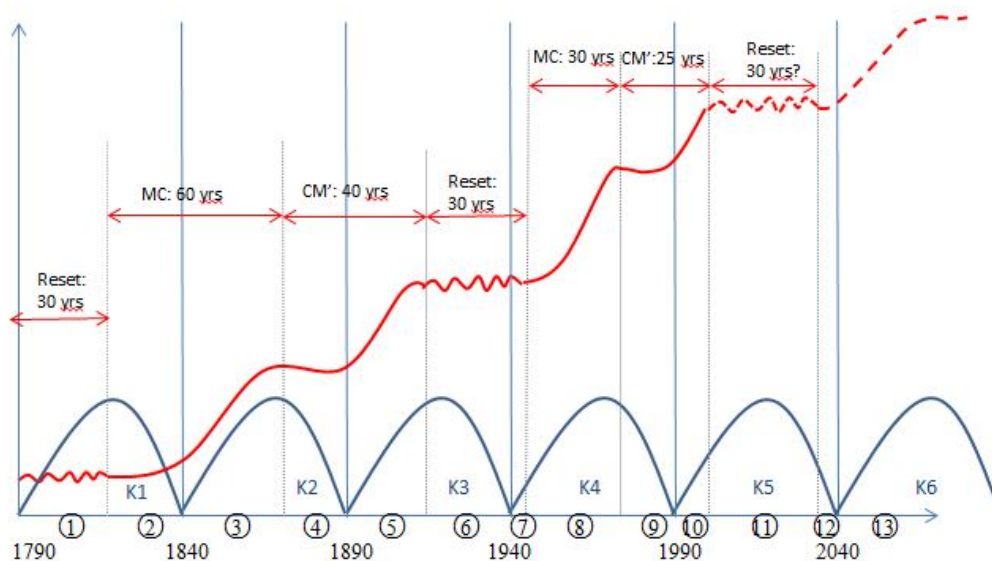
In his detailed accounts of these cycles, Arrighi sets out the specific and substantive dynamics at play in each of the historical cycles, tracing how one phase leads to another as the overall pattern clearly emerges. In particular, he focuses on both the geopolitical dimensions of these hegemonic regimes and the specific dominant social-political and cultural form or regime they take *within* and transforming the system’s geopolitical core. Thus described, however, we can immediately see that this would include all allusions to ‘neoliberalism’ as a *political project and regime* – as specifically the globally dominant regime of the CM’ cycle of US hegemony – or the Keynesian warfare-welfare (Cold War) social liberal state before it – as its MC cycle. In short, these are broad political projects that simply do not subsist at the specifically techno-economic level of the K wave. Yet Mason, and many others, repeatedly conflates these two levels of analysis.

This is not just a trivial issue of analytical niceties. For distinguishing them allows for a particularly compelling analysis of both the K wave per se and of how it can help us account for the historical record, thereby eliminating numerous challenges that are otherwise glaring and persistent. As regards the former point, freed of having to account alone for the entire sweep of the trajectory of the history of ‘capitalism’, the K wave can be conceptualized as the emergent rhythm of techno-finance-economic cycles under conditions of dominance by capitalist accumulation; i.e. of broader power/knowledge systems, of which they are evidently an inseparable part, but treated in their *most* (but never simply or completely) ‘techno-economic’ manifestation. Here, then, we are studying the specific dynamics of the interaction of the emergent phenomena that we designate as ‘economic’, the realm of a Schumpeter, a Keynes or a Minsky. But with the relative autonomy of this emergent sphere (a sphere specifically emergent under capitalism) preserved as ‘autonomous’ but still ‘relative’ – not absolute, as in purely techno-economic accounts – we can then examine the *interaction*, at Mason’s meso-level, of this K wave with the dynamics of the political-cultural and geopolitical processes of hegemony.

Here, K waves alone illuminate only broad trends of growth or stagnation, and of (specific) clusters of innovation – crucial considerations to be sure, and ones that, via the dynamics of emergence, consolidation, maturity and decline of specific clusters of (power/knowledge) technologies, are central to an understanding of the ongoing dynamics of the capitalist system. But the equally important issues of the specific character and *quality* of that growth, in terms of who wins and loses and how, are a matter of *the interaction of K waves with the political-cultural level of A-B cycles*. The theory of K waves is thus freed to be what it essentially is, a theory of specifically techno-economic dynamics, and is no longer tasked with explaining political and socio-cultural phenomena that it does not and cannot explain. While their conjunction preserves, and draws upon as bridge, the essentially political and relational nature of these techno-economic phenomena correctly identified by a Marxian perspective.

This takes us to the second point, regarding how the combination of K and A/B cycles proves particularly illuminating, and especially in contrast with (what now appears to be) the over-interpretation of K waves as doing both jobs on its own. Hence, now supplemented and situated by the complementary meso-level theory of A/B cycles, K waves first shed all kinds of objections and criticisms, and then can be called on to yield new and significant insights. To see this, look at **Figure 2**.

Figure 2: The Combination of K Waves and A/B Cycles, 1790-Present



Surely the most obvious gap in purely K wave explanations of the historical record is how these accounts deal with the 30 years between 1914-1945 (see periods ⑥ and ⑦ in Figure 2). This is perennially a source of confusion and fudging for K wave-based explanations, who generally treat both World Wars as extrinsic ‘accidents’ that need to be diluted out, or simply excised so that the 50 year cycles can then apparently work perfectly (though they never do). But this is clearly an ad hoc, and untestable, addition to the theory. And it is also one that is highly self-contradictory. For one of the most obvious aspects of both World Wars is the extent to which they stimulated socio-technical change, and in the case of WW2, the shift out of the Great Depression to the subsequent and historically unequivocal upswing of the *Trentes Glorieuses*. An account of techno-economic cycles that simply jumps over the role

of major war in innovation is hardly a credible one, and leaves a gaping hole in the middle of a (relatively brief) history it is aiming to explain.

By combining K and A/B cycles, however, the inter-war period is not only clarified without any such ad hoc assumptions. But it retains its importance in the overall evolution of the global capitalist system. Here, then, the entire period is *first* explicable in terms of the emergence of the periodic overflowing of the negentropic costs of an entire hegemonic MC-CM' cycle (in 1914, this being that of the British Empire). The timing of this shift is also entirely at the level of A/B cycles, i.e. at the level of global political-cultural events; namely the assassination of the Archduke and the headlong 'global' plunge into inter-imperial war. 1914 thus marks a definitive and unignorable shift in the shape of political economic trajectory, but one that the K wave can thus neither ignore nor explain itself. The knots into which K wave theories tie themselves in attempting to do so, therefore, are easily understood.

But the K wave dynamic does not simply evaporate. Indeed, it is crucially developing in inter-active parallel. This is key also as a necessary supplement of the A/B cycle-level explanation. For just as without the A/B cycle the K wave is quality-less, so too the A/B cycle offers an account of how global 'capitalism' cycles through periodic phases of global turbulence that last about one generation, but offers no insight into what is happening in this period of three decades at the techno-economic level.

Returning to the example of the inter-war period shows exactly how this combination is illuminating, though. First, through WW1 and then into the 1920s the global capitalist system was in a period of both global political-cultural turbulence *and* the peaking of the K wave from the 1890s. At the end of the 1920s and into the 1930s, however, the downswing is definitive, right through to the early 1940s. This thus explains the particular depth of the Great Depression, given the coincidence of both a K wave downswing and the absence of any established global hegemonic regime to manage and mitigate it (as had happened in the previous two and the subsequent downswings).

Moreover, viewing the K wave as a compound process over at least 2 cycles (as above), we can understand the techno-economic *character* of the 1920s, '30s and early '40s, as a period of significant techno-economic activity and change. But this is particularly in the form of the *consolidation* of the (information) technologies of the K wave then in its downswing, and the early stage emergence of the (energy) technologies of the next K wave (i.e. effectively US oil) that would kick-off the subsequent upswing from the middle of WW2. This was *not*, therefore, a period of techno-economic stagnation and quiescence. To the contrary, even as the Great Depression was unprecedentedly deep and destructive, techno-economic change proceeded at extraordinary pace (including, of course, as supported by capitalism's rivals, fascism and communism).

In short, then, in this key episode of recent history, the combination of the K wave and A/B cycle transforms what is, for K wave-based accounts, a black-hole of explanation into a period that is now not only accounted for within the explanatory schema, but also, vice versa, a test-case that shows this theoretical perspective is able to *illuminate* the empirical record in ways that are not otherwise obvious – surely the point of any such theory.

This combination of approaches also can account for why the K wave explanation alone is initially convincing, in that there are clear points of resonance between the dynamics of the K wave alone and both together. In particular, the early upswing of each MC A/B cycle is

clearly in-step with the upswing of the techno-economic K wave (③ and ⑧). Moreover, the emergence of what Arrighi calls the ‘signal crisis’, the phase transition from MC to CM’, is also clearly correlated with the peaking of a K wave. Both of these dynamics may also be readily explained. With the new hegemonic regime established, the definitive aspect to the fortunes of global capitalism returns to the relatively autonomous but dependent level of the political economy and (a newly stabilized regime of) techno-economic growth. And thus it is when such model of economic growth approaches exhaustion that the A/B cycle is forced to shift (or rather revert to) the dominance of finance capital; a shift at the level of the political regime of the capitalist system, not that of techno-economic dynamics.

As such, unequivocal dates appear in both accounts, especially 1945-1975 but also 1840-1870. But the necessary combination of both cycles also explains anomalies that the K wave alone cannot. For instance, these include the extended period after the end of the Napoleonic wars from 1815-1840 (②) during which British global dominance was assured but revolutionary fever persisted and economic growth was yet to take off – an anomaly that the A/B wave alone also has difficulty to explain.

But of equal importance is that the combined cycle gives the lie to a persistent misreading of the K wave – including by Mason – that an upswing is evidenced by the rebalancing of economic growth towards a broad-based win-win across classes and generalized improvement in living standards for all. This presumption, to the contrary, can be seen clearly to be based on an entirely unwarranted extrapolation of the historically *exceptional* combination of A/B *MC upswing* with an (*energy*) K wave *upswing* that marks the post-war period in particular. Indeed, getting away from this period as a touchstone of what a ‘healthy’ capitalism looks like (i.e. in *capitalism’s* terms, not necessarily that of humanity or the planet) is surely the biggest obstacle to current Left-wing (political economic) thought. After all, was Keynesianism in the global North and the ‘Great Acceleration’ it sponsored really so ‘healthy’?

Indeed, there are many other possible combinations of a K wave upswing that are clear upswings nonetheless. Hence we see in both the Napoleonic period (①, Hobsbawm’s ‘Age of Revolution’ – i.e. French and political, and British and industrial) and the end of WW2 (⑦) its parallel evolution with a phase of A/B cycle global turbulence; no doubt driving the eventual victory of the emerging hegemonies of Great Britain and the US respectively. And, no less clearly, in the late C19 and – crucially – the late C20 through to the turn of this century, a K wave upswing ran in parallel with a CM’ cycle; i.e. a phase of late-hegemonic financialisation (⑤ and ⑩). Such periods, of course, tend to increase greatly inequality and the concentration of (asset-based, rentier) wealth; i.e. the rebalancing of distribution *away from* labour to capital. Yet they remain the product and momentum of K wave upswings, however much we may politically deplore them, not evidence of the *failure* of a K wave to have emerged, as Mason argues.

To conclude, then, it is in the *combination* of K waves and A/B cycles, and with K waves themselves as compound dynamics of overlapping cycles of the emergence, consolidation, mass roll-out and exhaustion of clusters of socio-technical innovations as power/knowledge technologies, that we can best understand the evolution of the global capitalist system. And this process is ongoing, not broken, as we can see if we now turn to the present.

The Un-broken cycle

The most important conclusion, in its own right but also specifically in response to Mason, from viewing the present from the perspective just outlined is that the evidence is perfectly in accord with no break in the cycle of capitalism's evolution; and, indeed, strongly corroborating of its robust continuation, if not growth to unprecedented strength, scale and scope through to mid-century. Moreover, Mason presents plenty of evidence that supports this conclusion, not his own, as we shall see.

First, consider the excellent graphs that Mason presents (p.94 et seq.).³ For Mason, these show that the 4th K wave (of the jet engine, oil, plastics) was unnaturally extended while the 5th (of the ICT revolution) has never generated the economic boost it should have done. Conversely, on the perspective outline here, the period from around 1980 needs to be understood as a relatively complicated period consisting of several distinct phases:

1970s: MC to CM' signal crisis as K4 enters downswing ⑧ ⑨

1979/80 through to 1989/90: CM' established continuing K4 downswing ⑨

1989/90 to 2001: CM' with clear K5 upswing ⑩

2001 to present: 'reset' or 'turbulence' with K5 swinging up and peaking first in 2008 then stagnating but not yet re-peaking for subsequent downswing. ⑪

In short, then, the past 25 years have been *a clear and unequivocal K wave upswing*, against Mason's argument. But, of equal importance, *this has not generated the non-zero-sum global growth because it has not been conditioned by an MC cycle*. All this, in turn, indicates a clear and troubling conclusion: that the definitive peak and downswing of K5 *has not happened yet* (i.e. the 'second boot' has yet to fall), and that, in 2016, we should be prepared for it do so imminently. But more on this below.

Let us now compare the evidence Mason marshals against these two accounts. First, look at his opening graph of world GDP growth (p.94), ending just before the 2008 crash. We can both agree that the period after the 1970s is clearly weaker and more turbulent than the post-war period. Yet there is also a clear trend from the early 1990s through to 2008 (i.e. 18 years of a supposed 25/26 year upswing) of increasing year-on-year growth. To be sure, it remains both more turbulent and less impressive than the 1950s and '60s, but it is still unmistakably there and cannot be discounted. To do so, as Mason (and indeed many critics of neoliberal financialisation do), is to conflate condemnation of a system of economic growth for being based on growing inequality and intensifying class exploitation (which it is) with criticisms that it is failing on the metric of economic growth (or accumulation of surplus value). But this is an unnecessary and politically and analytically self-defeating mistake. Indeed, to 'defeat' neoliberalism we must first acknowledge how it has succeeded, *spectacularly* on some metrics. And that it delivered extraordinary economic growth, and for many, is a key aspect of this success.

Moreover, the demands here *ex hypothesi* that the K wave upswing sponsoring financialized neoliberalism's growth incorporates both the massive roll-out of a prior cluster of innovations *and* the definitive emergence of a new cluster are both manifestly met. The former is clear in

³ I will reproduce these graphs appended here in due course, but cannot at the moment as my own copy is covered in scribbles. Please refer to the page numbers in the meantime.

the new heights of (debt-fuelled) mass consumerism run on oil and plastics (unprecedented mobility, home decorations, packaging etc...) that are the fundamental pillars of late C20 economic growth – leading also, of course, to the importance of globalization and US wars to preserve access to oil after the peaking of its own reserves in the 1970s. But the latter is not simply clear, but also fundamental to Mason's *own* argument: namely the ICT revolution.

This, of course, leads into the debate about how profoundly ICTs have 'really' changed not just the political economy but also our lives. Yet the perspective here also offers clear responses to both objections. Regarding political economy, it is unquestionable that ICTs were *both* essential for the process of financialized globalization that drove economic growth through the 1990s and 2000s, *and* comparatively elite, not yet filtering into a wholesale transformation of the industrial structure and so appearing 'everywhere except in the statistics', as Solow famously put it. Yet, the two cycle dynamics of a socio-technical cluster would suggest this is precisely what we would expect.

Indeed, from this perspective, the present is a period in which we are just beginning to *consolidate* the ICT revolution and its multiple 'hopeful monstrosities' and the challenges they pose to socio-political life, while its most significant transformation and quantitative dominance of economic growth is still yet to come (e.g. Baxter & Shaw 2014). The extent to which ICTs have changed our lives, thus, may indeed be viewed (through a rather jaundiced gaze) as unimpressive – but it has also only just begun. And indeed, even as a 'GPT', the ICT revolution is, as Crafts (2005) notes, perhaps the *most* striking example to date in terms of its impact (at this early stage) on growth – showing the problem lies with the (theoretical) expectations rather than the absence of evidence.

Moreover, the combination of this K wave and A/B cycles also explains the specific form and character of this K wave, including both the turbulence and profile of the economic growth to which it has led. This is clear even at the level of its most abstract characterization of cycles – and yet more so once we drill down to the concrete meso-level (which is undoubtedly necessary but impossible in depth here, given constraints of space). Hence, emerging first in a CM' cycle before then passing into a period of political regime inertia and transition, the profile of growth would be *expected* to be both turbulent and engendering of multiple indications of deepening political economic imbalances even as there *is* a clear pick-up in global growth. This thus deals with the graph of world GDP growth, while Mason's explanation seeks to discount the nearly 20 years of clear upswing with the ad hoc explanation of a 'dead cycle' simply playing itself out. For the explanation here advocated, therefore, we have still a 'taut' conformity of fact and theory, while Mason's account is pushing a string, raising the unanswerable question of 'when will this anomaly end and in what way?'

But Mason's interpretation of other key graphs may also be brought into question then. Take for instance graphs unquestionably showing deepening problems of primary commodity prices (p.95/96), of financialisation and debt burdens (pp.96-99), or of socioeconomic inequality (p.98). All show clear breaks with prior trend and then upward trends from around the mid-1970s to 1980. But, on the one hand, there is no reason *ex ante* that these are necessarily indications of a K downswing, rather than a *transformation* in the *profile* of political economic distribution *together with* (not evidence against) the revived economic growth apparent in his first graph.

For, as discussed above, this would not be the first K wave upswing that has been characterized by shift to dominance of finance capital over productive capital, and all this entails, including rising debts, falling interest rates and growing inequality. Indeed, Mason would do well to compare the periods from the end of C20 not with the post-war period, but with the end of the C19. The *Belle Epoque* too was hardly a period of shrinking inequality, and yet still a period of unprecedented prosperity at *system* level – as was what Stiglitz has called the “roaring [19!]’90s”. And with financialisation comes both turbulence and relative growth in primary commodity prices, just as is clear in Mason’s graph of nickel prices.

Indeed, take a closer look at that graph (p.95). It does clearly show a rise in prices through the 1970s, *and* an overall trend of growth from the 1970s to the present that is striking in its peaks in contrast to the flat, stable lowland planes of the post-war period. And yet it does not *just* show that. The entire decade of the 1980s are, in fact, marked by a steady decline, such that an observer in 1988 would have been justified to see the peak as 1980 and prices falling back down to their historic steady lows thereafter. Then, after a massive and sudden peak in 1989, the 1990s too are relatively steady – albeit both higher and more turbulent than before. In other words, for the 20+ years of the CM’ cycle, commodity prices were *relatively stable*, not rising inexorably, even as they were *more* turbulent and *higher* than before and with a clear historic peak in 1989; i.e. the very date of shift between K waves. And *all* of these characteristics need to be accounted for: something that the combined A/B and K cycles can offer, but K waves alone – even Mason’s political economic reading of them – cannot.

Moreover, as is clear in this graph of nickel (= primary commodity) prices but also in many others, there is another, and just as important, break with trend and acceleration that Mason largely neglects but is perhaps the most striking feature in all of these cases that he presents. This occurs from around 2000/2001, a date that does not feature in Mason’s explanation. This break is clear not just in the graphs for the economic imbalances that Mason takes as indicative of K wave dysfunction, e.g. ‘money in circulation’ (p.97), ‘financialization’ (i.e. % of US finance sector profits of total business profits, p. 99). More importantly still, it is there in the series of graphs (from pp.100-105) that show the effects of (financialized neoliberal) globalization on the *global* distribution of wealth.

This takes us the crux of Mason’s explanation and its errors. For recall that the key to Mason’s argument here is that the working class – who must resist the greater exploitation conditioned by a K wave downswing in order to *force* the innovation that will undergird a subsequent upswing – was destroyed in the 1980s and 1990s. The theoretical intuition behind this argument remains compelling. But its translation into empirical history is profoundly misled by Mason’s own *de facto* but surprising definition through his account of the ‘working class’ as white, Western and industrial (and male-dominated).

There are obvious and understandable reasons for this mistake in Mason’s case. For he is not only an astute expert on this world and its history, but a product of it; and as such an observer of it capable of not only analytical insight but also powerful description of the lived tragedy that its recent decimation has been for so many – so many to whom the ‘West’ owes so much even as they have been demeaned in the public imagination as ‘chavs’ and ‘hooligans’ (witness the recent justice for the victims of Hillsborough disaster, a generation after the event itself). Similarly, as Mason’s graph (p.102) clearly shows, this group has been the unequivocal losers of the period since 1980 – and so meriting attention in that role, even if only for understanding of the systemic dynamic.

Yet, this focus and definition is a mistake all the same. For not only does it underpin Mason's mistaken conclusion that there was no transition to a new K wave at the end of the C20, but it also affords overlooking what – without diminishing the plight of the western working classes – is the much *bigger* story of this period (continuing to the present) that must be factored into the explanation: namely the spectacular growth of the global South. And where this includes the growth of 'Southern' working classes,... but also 'middle' classes too.

Let us briefly consider several of Mason's graphs to illustrate this point and to see how the combined A/ B and K cycles illuminate the record in ways that Mason's account do not.

First, regarding global investment flows (1970-2012, p.100). Here one sees four clear phases: very low and steady FDI up to 1980; then a first mini-cycle of rise, fall and rise again through the 1980s; followed by a much steeper rise through the 1990s to a dramatic peak in 2000; and then a further fall and rise to new highs. Moreover, the growth is overwhelmingly concentrated in intra-global North FDI through to 1990 and is always dominated by this movement. But FDI to 'developing countries' first takes off around 1990, and then from 2000 enters a cycle that leads to increasing absolute heights and global percentages. What the bust of 2000/2001 marks, therefore, is a definitive rebalancing of global investment away from intra-North to 'emerging markets'.

Secondly, a similar break in trend is clear in GDP per person (p.101). Here, for all three of 'world', 'developing countries' and 'former communist countries', GDP per person takes off from 1990. More striking still, developing countries' figures rise from about 1/3 to nearly 1/2 of the global average between 2000 and 2012. This is surely the biggest economic story so far of this century. And with it has come the 'doubling of the world's workforce', as Mason notes (p. 103).

Moreover, while his graph showing the 'real increase of income' by 'percentile of global growth income' (p.102) between 1988 and 2008 clearly shows that the global 1% has done spectacularly well over this period, while every other income bracket in the North have been globalization's clear losers – in absolute not just relative terms in some cases – of equal significance is the massive real rise in income for the vast majority of the world's population (for global income percentiles from around 10% to 70%). This process is also borne out in his graph of 'employment by economic class', which shows the biggest growth between 1991 and 2011 in the 'developing middle class (between US\$4 and US\$13 [per day])' and the 'near poor (between US\$2 and US\$4)', while the percentage of those still poorer has shrunk; and in all cases with the biggest changes again from 2000 onwards.

Mason's evidence, thus, shows not only a clear *global upswing* through 1990s – and where this is a *global upswing* not just one for the OECD countries – *but also* a further upswing and clear break in trend from 2000, unleashing the growth of the global South. In both respects, therefore, these trends simply *do not fit* with Mason's interpretation that there is no evidence of economic growth in a new K wave beginning around 1990. To the contrary, the evidence of this upswing is ample, even if it is not evidence of a new 'balanced', productive and social democratic kind of growth (in the global North). And neither can Mason's schema explain the *shifts* in this period, up to the present, in particular the break from 2000.

Conversely, read together, we can understand the 1980s as a period K wave downswing and CM' emergence; the consolidation of the latter with the emergent K wave upswing in the 1990s; and then the overflowing of neoliberal financialisation into global turbulence – an

event that can only occur at the level of political-cultural hegemony and its resistance, as with 9/11 – still with the K wave upswing in 2000/2001. This also then affords explanation of the dramatic change in fortunes in economic growth in the global South. For with a definitively weakened US hegemon, neoliberal pressures (such as through the WTO trade rounds) became suddenly weaker and the global South found itself (and especially powerful, populous places like China and India) able to participate in global trade on rules and *de facto* practices more to *their* benefit than had been the case since at least 1945, if not centuries before. For, as Mason again (correctly) notes (p.102), “during the post-war boom [and through the neoliberal period], capitalism suppressed the development of the global south.” In short, the clear winners of the emergence of period of global turbulence at the turn of the millennium (at least initially) were the (capitalist) economies of the global South.

But what about Mason’s argument that the working class were defeated? Surely we are not claiming that the new working classes of the South were capable of resisting capital and forcing a new K wave upswing? Indeed not. But note how this element of Mason’s argument gets the timing and rhythm wrong of his own explanation. It is during the *downswing* that working classes must resist in order to stimulate the efforts that will *then* precipitate a new upswing. And once the upswing emerges, working class forces have *always* tended towards a dampening of political radicalism and the establishment of their *own* hierarchies, moral economies and settlements, adapting and accommodating to the new hegemonic regime.

On *this* account, though, Mason has himself (and in *this* book of his, not just elsewhere) presented abundant evidence of just such labour militancy. In his descriptions of (Northern) labour and union radicalism through the 1970s and into the 1980s, we have in Mason’s own words as good an account of the kind of resistance that, according to his theory, would be needed to force an upswing as can be imagined. Indeed, if the extraordinary labour radicalism of this period, and with unprecedented levels of empowerment following the long MC cycle of the social democratic state, was not enough to force such an upswing, we may be tempted to ask “what would be?”

Looking beyond the working class as ‘white, western, industrial, male’, however, allows us to see the K5 upswing for it was. That is, still unquestionably an upswing, but one in which the ultimate *triumph* of *this* working class’s empowerment and radicalism during the previous downswing was a terrible twist of fortune. Namely to stimulate the parallel and mutually reinforcing processes of ICT innovation, financialisation, global liberalization and the offshoring and automation of industrial work beyond the erstwhile global core; i.e. the very processes that subsequently eviscerated *that* working class, as Mason describes. But it also has sown the seeds for a much bigger, diverse and global class of those exploited by capitalism to resist its advances. On this note, though, it is all the more surprising that Mason uses this highly circumscribed definition, and misses all that comes with it, given his conclusions that the gravediggers of capitalism are not now and never were *this* working class and the need for the Left of the North to broaden their political imaginations beyond this highly economistic (and we might add, tacitly racist and sexist) ideal.

Let us recap what we have seen instead. The K wave is revealed not to be dead, but alive and kicking; precisely in accordance with the last discussion where we showed the conceptual possibility of information capitalism. Indeed, what is in its death throes is not capitalism but the specific A/B regime of US-dominated financialized neoliberalism. Nor is the working class shown to be dead. Or, more accurately, the class that must resist capitalism’s ever-deeper exploitation in order to compel the innovation that dynamizes system evolution is not

dead. Rather, on the one hand, the *Northern* working class was extremely *successful* in its resistance through the 1960s-1980s. While the very upswing that then emerged has forged entirely new, and massively more populous, classes that are increasingly central to both global capitalism and to resistance to the exploitation conditioned by its downturns, and so increasingly empowered to resist. But this is now a *global* class, or rather classes, incorporating not just those familiar as industrial working classes, but also (and perhaps in the first instance) the equally massive new ranks of the white-collar, self-employed, service and/or entrepreneurial ‘middle classes’; a class that bears little resemblance to the ‘middle class’ of Northern imagination in terms of actual incomes, assets and expectations.

Where are we now?

We opened by saying we would argue here the information capitalism is not just abstractly and substantively possible, but also the most likely future. This brings us back to the present, and comparison of the approach here with Mason’s conclusions regarding the imminent future.

Perhaps the most significant findings of this perspective – and one that should be testable over the next few years and decades – however, are the following predictions about the short-to-medium term future. First, if we read the present not as the slow but turbulent winding down of capitalism, but instead as the combination of the peaking of the ICT K wave with a period of A/B cycle turbulence (Ⓢ), the following should be expected.

First, and arguably foremost, 25 to 26 years (i.e. half of a full K wave) from around 1989/90 takes us to 2016, i.e. now. This suggests that the crisis of 2008 and the subsequent stagnation to date has been the period between the first and second peak, with the downswing still yet to emerge, but likely imminent. In short, if it has been ‘kicking off everywhere’ since 2008 (if not 2001), the current stagnation-but-not-yet-collapse of the (neoliberal) global economy, and especially in the global North, will likely be simply the beginning of a much more turbulent period still to come – politically and economically.

The combination of turbulence and K wave peaking does much to explain the last few years. First, in an age of turbulence, the initial peaking of the K wave in 2008 precipitated a much bigger economic shock than would have been experienced in an age with a more settled regime, and has persisted as economic malaise amidst precisely such a political gridlock and transition. Moreover, with the growth of the global South fairly robust, albeit now faltering, the global economy, still centred on the global North, has been able to hobble along, preserving and indeed retrenching the previous political economic status quo even as this deepens system dysfunction (in terms of political rejection and legitimacy crisis, but also worsening economic imbalances). Finally, with the crisis relatively early in the phase of turbulence, enough of a status quo regime remained to contain its worst effects, compared to the early 1930s say.

Yet, the post-’08 zeitgeist of foreboding and imminent reckoning is not here gainsaid. To the contrary, with neither a new hegemonic settlement nor a new upswing in sight, the climate of ontological anxiety both is explicable and seems well-placed, with the downswing still on its way. Moreover, there is significant evidence that the definitive second peak is coming very soon. As Richard Duncan has detailed, for instance, the entire arc of neoliberal financialisation has depended upon what is effectively a Ponzi scheme of utterly unsustainable deepening system indebtedness. And this trajectory has simply been continued since 2008, for all the talk of austerity and paying down the deficit. It is in *this* respect that

Mason is correct to point to the unsustainable growth of political economic imbalances. No less importantly, Mason's graphs offer further reasons to see a new and deeper crisis, specifically in the exhaustion of the growth of the global South in the political economic context of a late US-dominated neoliberalism; i.e. in a regime that has generated contingent benefits for both continued growth of the neoliberal system and economic growth of the global South, but which is not founded fundamentally in the interests of the latter regions and so has exhausted that conjunction.

Look, for instance, at the graph of global productivity growth (p.104). As Mason himself notes, productivity growth in the 'mature economies' has fallen consistently from the early 1970s. Conversely, it has grown in 'emerging and developing economies' since the early 1980s (i.e. since the shift to CM' and globalization); first with diminishing rate of *falling* productivity in the 1980s, before turning positive and growing continually through the 1990s. Southern productivity growth then overtakes Northern in the late 1990s, effectively becoming the engine of global growth, before peaking in 2006 and then falling at the same rate that it was previously rising. Mason's graph ends in 2013, but with downward trends in both Northern and Southern trajectories. And, of equal importance, both are tending towards convergence at 0% annual productivity growth in the next couple of years. Indeed, as I write this, I see the following headline in my inbox: 'most nations face a productivity crisis', notably *including* China (see <https://www.linkedin.com/groups/4457723/4457723-6133957603090325507>). This eventuality, however, would certainly precipitate a global economic shock, with global growth juddering to a halt, and then dramatically exposing all the continuing global economic imbalances.

But would this not be corroborating evidence for Mason's argument too, that capitalism is about to implode? Indeed, if/when this occurs it could certainly be read as such, and no doubt *will* be read as such by many. To see the difference between Mason's prognosis and the one presented here, therefore, we need to consider two further points. First, what is likely to be happening (and what should we look for evidence of, and, indeed, engage in) regarding innovation (as a socio-political process, recall)? And secondly, where that innovation (and all the political economic turbulence and change, in inter-active parallel) is likely to be heading. In both respects, this account and Mason's offer very different conclusions.

As regards the former point, for Mason the impossibility of information capitalism, and the *dependence* of capitalism on an information capitalism for its continuation, mean that this new and worse turbulence augurs the end of capitalism and, possibly if fought for, the emergence of something better, *after* capitalism. What *should* have been the K wave of ICT should thus be manifestly failing as innovation organized in the shadow of, and supporting evolution of, capitalism. Instead, ICT may indeed be developing but largely 'outside the machine', in forms of spontaneous and free collectivity, while commercialized ICT innovation will be progressively eating itself. Use value should be emerging triumphant and self-sustaining over the parasite of exchange value.

Conversely, according to the account here, the new crisis is evidence of the combination of a *new* downswing after a peak (so, yes, the last 10 years have been comparative upswing!) amidst a period of A/B cycle turbulence. Yet, recall that the downswing of a K wave is here *not* the demise and stagnation of that K wave's eponymous cluster of technologies. To the contrary, it is a period (creating and working through its *own* immanent dynamics of socio-political turbulence) of *consolidation* of those innovations, together with the demise of the *previous* cycle's innovations.

Here, therefore, we expect to see, through to approximately 2040, the profound consolidation of the ICT revolution as it finally percolates into and transforms the productive economy. While, simultaneously, there is a progressive but messy and stormy shift away from the infrastructures and technologies of the post-war K wave, i.e. that of the ‘oil age’. In this respect, perhaps the most significant industrial and consumer domain on which to focus is urban automobility (which just happens to be the focus of my ‘day job’ research). But here in 2016 we are indeed seeing definitive embryonic signs of a new urban automobility system that is both fundamentally being realigned with digital technology *and* the repudiation of oil; and, moreover, with China, not (just) the US and Europe and Japan, as a key player in this process. What we do not see, meanwhile, even in areas supposedly primed for mass public overrunning of business for profit, such as journalism and music, is evidence of the imminent demise of the dominance of capitalist models of production.

Secondly, regarding the medium-term. For Mason, again, the medium-term is clear: the swan song of capitalism and its replacement with something else, for better (or possibly worse). On the perspective here, however, the downturn and global turbulence that may be on its way is not evidence of capitalism collapsing. To the contrary, it is precisely the global-system phase through which capitalism has historically passed in the reconstitution and resettlement of a new hegemonic regime (12).

Note again how this analysis is not possible at the level of the K wave alone, however much Mason correctly wants to insert a constitutive role of politics and struggle in the evolution of capitalism. Rather, it is only at the level of the A/B cycle that it becomes clear that such global tempests are not a problem for capitalism but the *very mechanism of its systemic renewal*; a process that can *only* be profoundly unsettling, contested and creatively destructive given the profundity of system change presupposed for the successful political economic growth of the system as a whole. And, again, *combined* with K wave evidence that *that* dynamic is also, *pace* Mason, in fine fettle, it seems prudent to start by assuming that capitalism and its renewal, not destruction, from this turbulence is the most likely and systemically-enabled outcome. Lest it need be stressed, however, none of this is to say that capitalism is thus somehow ‘natural’, let alone ‘good’ *per se*. It is simply to say that it would be serious strategic mistake to misread the ensuing age of turbulence as evidence of capitalism’s weakness rather than in its very domination and further incubation.

Read together as K waves and A/B waves, then, this analysis suggests that the parallel consolidation of the ICT cluster – together with the progressive emergence of a new (energy) cluster – and the playing out of the current generation of turbulence will eventually result in:

- first, around 2030 (12), a renewed settlement for global capitalism with new ‘common senses’, regulatory architectures and even subjectivities that are still unfamiliar, if not inconceivable, in 2016 – just as the Bretton Woods system would have been in the early ‘30s; and,
- then, the sedimenting of this new regime and its ‘deserved’ success (i.e. its widespread hegemonic acceptance) through riding the next K wave upswing as it emerges around 2035/40 (13).

As such, while we have seen above that every K wave upswing does not need growth of the sort that Mason tries but fails to track down with a broad-based rise in wages *for ‘all’* and rebalancing of ‘healthy’ economic growth, from about 2035/40 this may indeed re-emerge – albeit, of course, itself only temporarily. But it is precisely *through*, not in spite of, the global

turbulence to come that this process may yet unfold. What Perez would call a ‘Golden Age’ may thus be on the horizon. But there is one hell of a storm to get through first. And, of course, that Golden Age will itself be followed by the return of more familiar, darker phases of capitalism; and nor it will be ‘Golden’ for a great number at the time.

Conclusion

We can only wait and see which of these two prognoses actually happens. But, assuming the position of the perspective here, there are big stakes in being mistaken in the meantime. For, if we really do accept the *constitutive* role of political contestation in shaping A/B regimes and the specific kind and political geography of capitalism that characterise them, then their remains much to shape and much to fight for; both in the short-to-medium term of the emergent MC cycle from 2030 (and especially in the ‘crisis’ period up to then), and then the longer term of capitalism’s continued *global* evolution towards further systemic – planetary and human – limits and the subsequent actual emergence of post-capitalism.

Moreover, seeing this as the strategic goal may seem defeatist or small-fry to those convinced that the end of capitalism is nigh and the only legitimate political target. But what if they are wrong and capitalism is indeed as robust and as energized by turbulence as is here argued and the present challenge remains to *shape* capitalism? Well, then they are engaged not only in a doomed political project, but also one that is strategically self-defeating, fighting on collapsing political terrain that appeals to perhaps the only diminishing political constituency in the world today (i.e. the Northern C20 working class and/or intellectual Left) while wilfully ceding the initiative on what *may* in fact be achieved, amidst the ‘opportunities’ of ‘crisis’, to political forces firmly on the side of those who are likely to be the C21st capitalism’s winners in any case.

This would be a grievous and culpable wrong on the part of the Left, allowing a form of information capitalism that is not only exclusive, exploitative, divisive and on a global scale – as it is bound to be in many ways – but very much *more so* in each respect. This is not a trifling difference, but the difference between dynamics of potentially increasing global empowerment over the 21st century with significant concrete wins along the way affecting the lives of potentially hundreds of millions (and the planet), and those of a politics of proud but increasingly disempowered radicalism. And, moreover, a future in which the Left (at least of the global North) would be contributing little, even to the creation of powerful ideas, ideals and arguments with which the global (*including* Northern) billions may be inspired and enabled to resist this new regime of accumulation and exploitation. Instead this Left will likely be increasingly characterised by either dispirited disappointment that the end has not arrived or a militant dogmatism that it is coming any day (“as long as we cultivate sufficient political zeal!”). Given the trenchant critique of the history of Leftist thought and political economy in Mason’s book, I have absolutely no doubt that this is not a politics in which he himself has any interest whatsoever. But to avoid being its unwitting prophet, he needs to revise his account and postpone hailing the end of capitalism.

The next blog in this series will discuss the third set of criticisms, regarding the relations (or not) between abundance and social justice in the information society.

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Addendum (13/5/16)

We have argued above that the K wave pattern would suggest that 2016, at roughly half-way through the current K wave, could be a significant turning point, possibly being the second peak before the downturn begins. This would suggest that the medium-term future is likely to be even more turbulent than the last 15 years, which, for all the undoubted political economic malaise, have been a global upswing and then its plateauing, especially in the global South.

On further reflection, though, we need to clarify this claim of imminent political economic turmoil (!) in terms of both the timing and the likely shape of the interaction of A/B cycles and K waves during that period.

First, regarding the timing. From analysis of the shape of previous K waves, it emerges that the downswing, and its most dramatic empirical manifestations, do not happen from the mid-point of the K wave. Instead, the K wave seems to take a slightly different shape divided into ('harmonic') thirds of approximately 17 years, but with this slightly skewed towards the upswing (as perhaps we may expect in a system built upon economic growth). This leads to a shape of approximately: 17 years of clear upswing culminating in the first mini-peak, followed by 18 years of plateau (first slightly up through the wave's mid-point, and slightly down thereafter) culminating in the second peak, followed by the steep but flattening downswing to the end of cycle (15 years).

This produces the following historical timing, which fits strongly with the historical record (Table A1), especially when compared to timing based on a first peak at 17 years and second peak at 25/6 years before a downswing of similar length (Table A2):

Table A1

<i>K wave</i>	<i>Upswing</i>	<i>Peak 1</i>	<i>Plateau (Up)</i>	<i>Plateau (Down)</i>	<i>Peak 2</i>	<i>Downswing</i>
K2	1840-1857	1857	1857-1865	1865-1875	1875	1875-1890
K3	1890-1907	1907	1907-1915	1915-1925	1925 ('29?)	1925-1940
K4	1940-1957	1957	1957-1965	1965-1975	1975	1975- 1990
K5	1990-2007	2007	2007-2015	2015-[2025?]	[2025?]	[2025?-2040?]

Table A2

<i>K wave</i>	<i>Upswing</i>	<i>Peak 1</i>	<i>Plateau (Up)</i>	<i>Peak 2</i>	<i>Downswing</i>
K2	1840-1857	1857	1857-1865	1865	1865-1890
K3	1890-1907	1907	1907-1915	1915	1915-1940
K4	1940-1957	1957	1957-1965	1965	1965- 1990
K5	1990-2007	2007	2007-2015	[2015?]	[2015?-2040?]

So this would suggest that the next ten years are indeed likely to be economically (even more) disappointing and challenging than recently, but that a 'crash'-like event, equivalent to 2007 or 1929 is some ten years away.

With this in mind, we can then turn to ask 'what do current high-level trends show may actually be happening over the next 10 years?' Of course, the first thing we must add is that none of this analysis stands on its own and can only lead to more substantive and meaningful

prognosis by exploring a concrete meso-level analysis that it can stimulate and perhaps illuminate – not done here, but being done alongside this analysis elsewhere (to follow).

Returning to the level of analysis at hand, though, our starting point must again be examination of the combined effect of the K wave dynamics above and its parallel co-production with A/B waves. These, recall, would suggest emergence of a new hegemonic settlement around 2030. But the K wave dynamics must also be explored in terms of the compound and inter-active effects of the dominant technology clusters. In particular, as the K wave passes beyond its mid-point, it may not collapse into a downswing, and yet a phase change has occurred that is definitively shifting the interactive dynamics between the 3 clusters predominately in play at that moment: the dominant K_{N-1} cluster, the new but eponymous K_N cluster, and the embryonic K_{N+1} cluster.

Here, then, the K_{N-1} is increasingly exhausted and, indeed, it is this dynamic that primarily explains the shift to downswing. This is also in a three-way positive feedback loop with deepening consolidation of K_N and the emergence of K_{N+1} . While the demise of the K_{N-1} cluster thus *accelerates*, the system downswing also accelerates but then *flattens* as the quantitative systemic effect of that cluster diminishes while that of the (still growing) K_N cluster grows. In this way, the next upswing emerges out of the downswing, in a process of destructive creation, rather than as mysteriously *ex nihilo*.

And this also can then explain the pattern above as in Table A.1 in a process that clearly captures salient points of the 1920s and '30s: first there is phase shift mid-plateau and mid-cycle as the decline of K_{N-1} clearly takes hold. As this accelerates, so too does both the overall aggregated downswing, but also the evidence of strength in both K_N and K_{N+1} which can fuel a speculative peak. Yet the evidence of the dominating K_{N-1} downswing is also increasingly apparent. Together these feed into a peak and then crash as the underlying K wave downswing accelerates to its fastest rate. But thereafter, with destruction of K_{N-1} now clear and definitive, and investment shifting out of it into the other two sectors, the downswing flattens as the subsequent upswing takes shape.

The following salient points emerge from this account regarding the short-term future.

1) Globally, the timing of this K wave process set alongside the 30 years of the 'reset' A/B phase is notably different to that of the early 20th century. In that case, the second peak and dramatic downswing occurred in the very middle of that 30 year period; in other words, when the capacity of both the outgoing and incoming hegemon was likely at their very weakest. And the first peak occurred towards the end of a CM' cycle, with the British still firmly at the helm.

By contrast, this time, the first peak was early in the 'reset' period, such that a US-led global effort was able to stem, but not fix, the ensuing political economic malaise. But, similarly, on the timing of Table A.1 (vs. Table A.2), the second peak – the next moment of intense political fragility of the global capitalist system – will also be much nearer the end of the reset period, some 10 years from now. By then, it is possible that the new global settlement (that I expect to be centred on China – an issue for another discussion)* will be much more clearly established. Conversely, were it to happen this year (as in Table A.2) it could indeed be as catastrophic as was 1929 and the subsequent rise of fascism.

2) But that then raises the question of what are the implications of the evidence for an imminent phase change, in terms of the declining global productivity growth converging on zero, slowing global growth in the global South and deepening questions about the size of Chinese debt? Here, the shift from A.2 to A.1 timings does not gainsay that this is indeed likely to be a change in trajectory, but only from a flattening upswing of the plateau to its downward shift. So this will likely be a lot less dramatic than a repeat of the 2007 financial crash. But it is a significant shift nonetheless, and does still spell deepening political economic turmoil over the next 10 years, not its mitigation.

Crucial here, however, would seem to be the effects of this process on the transformation of the political economy of the only nation-state that has any prospect of playing the systemically essential role of hegemon, namely China. For what the growing literature about whether or not China will ‘rule the world’ primarily shows is profound scepticism that ‘China’ in the form of its *current political economic regime* has any prospect of achieving sheer dominance of the world system, much less willing acceptance from the vast majority of the world – and especially the still-powerful countries of the erstwhile core. Here, then, the question becomes, “How would China need to change, in parallel with the ongoing turbulence of the passing global capitalist order, such that it would be able to play this role?”

But this is not only a matter of essentially domestic political economic change within China (albeit in ways that will evolve in inseparable parallel with the real and powerful forces of the global system). It is also one that takes us back to the imminent conjuncture of a plateau down-turn and the continuing A/B turbulence. For this is likely a powerful crucible in which such changes *in* China may be forged. And, indeed, not only is the evidence for a phase shift focused in China (which also dominates figures aggregated as ‘emerging markets’ or ‘global South’), exposing China to the challenges of the malaise that has been primarily a European and American issue since 2007; but also we see in history clear examples of how a K wave downswing was actually pivotal in driving the kind of major political economic regime change in the emergent hegemon such that it became conceivable, and then inescapable, that it would (be able to) assume that role.

Hence, in 1919 the US set up but refused to join the League of Nations, returning to splendid isolation and a political economic orthodoxy of rule by the Morgans. It was then the shock of the Great Depression that transformed the US itself and its domestic politics such that it entered WW2, assumed leadership in shaping the post-war world system and exported its social liberal (and anti-imperialist) policies of stimulus, reconstruction and welfare-warfare state upon which its hegemony was then assured. And with the rise, and subsequent upswing, of the K wave of the motor car as central to this new hegemony.

The 1920s may not have been littered with breast-beating tomes about ‘when the US will rule the world’ for the simple reason that it was already a liberal democratic and culturally Anglo-European state that was familiar to the incumbents. Yet the problems with and domestic obstacles to US hegemony in the 1920s were no less obvious and compelling than those of Chinese hegemony – likely based on a new energy K wave – in the 2010s. Contemporaneous observers would not have reckoned with the extraordinary impact of the K wave downswing and its destructive creation over the following 20 years. Today, we do not need to make the same mistake.

* Though we should note immediately here that the idea of a global capitalist system ‘hegemon’ is *not* the same thing as saying ‘China will rule the world’ – any more than Britain ‘ruled the world’ in the 19th century or the Dutch ‘ruled the world’ (or even Europe) in the 17th and 18th centuries.