On Paul Mason's 'Post-Capitalism' – An extended review
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Part 2: Capitalism is Not About to Die, or The Possibility of Information Capitalism

Having considered the main points and strengths of '*Post-Capitalism*' in the Overview, we can now begin to turn our attention to a more detailed consideration of its problems. This is done – here, and in subsequent blogs – at length, not because the book merits demolition by hatchet-job, but, to the contrary, because its arguments are so fertile and productive but also problematic.

We start by considering the inter-related and inseparable problems regarding Mason's use of two of his key theoretical pillars – information economics and the labour theory of value (LTV) – in order to dispute the conclusion that capitalism is about to implode given informationalization of the political economy. For Mason, this follows (see Overview) from the fact that information is difficult, if not impossible, to appropriate and hence tends to its free and costless circulation, thereby undermining the price mechanism that is the heart of a market economy. The problem with this argument is not that it is *per se* wrong so much as it is overstated and harmfully incomplete.

Against this claim, we argue here that information is not and never will be 'free' in this sense (against the information economics Mason draws on); and, secondly, that the core of capitalism is *markets for labour power* and, as such, an information capitalism is perfectly conceivable in terms of (stratified, unequal) markets for *knowledge* labour power (against Mason's orthodox reading of the LTV).

Round Once: Information is Not Free

The first building block of the argument that information(alization) undermines capitalism is that the price of information – via marginal costs of its *re*-production – quickly dwindle to zero. This, in turn, is based on the idea that we can analyse a (political) economy of 'Information' as an abstract intangible thing, to be contrasted with the *tangible* things produced, for example, in Marx's insightful descriptions of the capitalist 19th century factory and the 'law of value'.

There are several inter-related and mutually compounding problems with the latter claim, that then in turn undermine the former. At heart, the problem is that 'Information' as a single, abstract generalization is a highly misleading conceptual basis for thinking about a political economy of information. Understood in these terms, it is hard indeed to avoid having in mind a purely intangible and ideational 'thing' – an idea, say – that supposedly captures the most important aspects and characteristics, from a political economy perspective, of the undoubted explosion of 'information' in contemporary life. The inclination is then to ask how this kind of thing can be produced and consumed, and maximally or optimally so, including by way of making a profit in doing so and appropriating 'it' at some point.

With this picture in mind, however, the answers to all these key questions are already answered. For it is self-evident that an idea *cannot* be appropriated, that my telling you does not deprive me (compare the classic example of 'the time' and 'my watch'), and that it is not

so much that such 'Information' *tends* to zero costs of reproduction, but they are 'born free'. Where their production has been arduous and effortful, therefore, mechanisms to slow or prevent this immediate free circulation are needed – both legal/regulatory, like an intellectual property system, and/or technology, like digital rights management.

To be sure, these considerations are not completely uninformative, explaining (if also obfuscating)[1] the rationale for the IP system, say. But approaching information in this way also conceals as much, if not more, than it illuminates. In particular, far from being an informative limit case – an 'idealization' familiar (but themselves controversial, as critiques of economic methodology attest) to mainstream economics, that is supposed to bring forth a key characteristic that can then be built upon for a more comprehensive understanding of the puzzling phenomenon in question – treating 'Information' in this way is actually an exaggeration to the point of fiction.

While 'free-floating' ideas do exist, such as commonly used concepts that afford relatively successful interpersonal communication as a thoroughly mundane activity, they most definitely are not the only, or even the majority and/or the most important, part of the proliferation of 'information' with which we are concerned from a political economic perspective. (And, indeed, even the ideas that *are* 'free-floating' are actually *not*, but are dependent upon equally mundane and everyday work and effort, such as schooling each other in the incredibly complex preconditions of successful communication, as ethnomethodology, symbolic interactionism and actor network theory have shown).

The 'Information' that concerns us, to the contrary, is actually a highly diverse collection of ontologically heterogeneous phenomena: from unintelligible data streams and bits or genome sequences to music to the extraordinary range of texts, maps and images to practical embodied skills to recondite or highly specific forms of advice and guidance.

In all these cases, however, information is *never* free-floating and hence analysable in such uniform and abstract terms, while treating it as such misses precisely what is most important about it from a political economy perspective. Rather, they are always dependent upon *some* level of physical or material substrate (even if this is only digital code embodied in electronics). Indeed, this is not merely to 'abstract' from a given, empirical reality while leaving the complex whole intact, like following a single player in a team sport to understand how the game is played. But it is to abstract out of the given reality *altogether*, like watching a theoretically idealized player run around the pitch alone (see Tony Lawson's work on this).

Built upon this fictionalized 'thing' called 'Information', however, an entire edifice can be built that leads to the conclusions Mason takes up. Conversely, a meso-level empirical assessment of how *actual* information-rich things are produced and reproduced, circulate and are consumed points to a much more complex picture of how information affects given (understandings of a) capitalist political economy – which it undoubtedly does in novel, deepening and interesting ways.

Before we consider some of these, it may be interesting to note how these problems of theorizing an information (and possibly capitalist) economy illuminate serious

[1] For instance, this form of 'abstract' and naturalistic or timeless argument lends itself too easily to a liberal misrepresentation of intellectual property as a matter of natural right of the producing individual, as opposed to their irreducible political provenance, as socio-political *bargains* that are accepted insofar as they are in the 'public good'; what Peter Drahos nicely calls 'intellectual monopoly privileges'.

methodological challenges for existing economic orthodoxy, *including* an orthodox materialist Marxist economics. The necessity of attention at the 'meso' level to how *specific* information-rich goods are produced etc… and to their systemic effect on the circulation of exchange value, if we are not to overlook what is most important and interesting about them, goes directly against the grain of both these economic orthodoxies, which proceed from idealized 'first principles' (mainstream economics) or abstraction from an idealized 'factory' (orthodox Marxism) to generalized and abstract conclusions about (political) economy.

The former is an exercise in formal decision logic under certain foundational assumptions that may be more-or-less questioned for their realism. It is thus of limited, but not necessarily no, interest; except when it comes to markets of *information*, in which case, presuming perfect information as axiomatic, it is internally incoherent and ruled into dumb silence.

For Marxian economics, meanwhile, a critical analysis that proceeds from the quandary of how the factory produces a profit when all things (including labour) exchange at market price leads to crucial insights about the workings of a capitalism founded on material production. These are still *abstract* conclusions – i.e. regarding the law of value – but they nonetheless illuminate a hidden but system-constitutive process of surplus value extraction that may be generally applied to any such material process in ways that also yield important insights; including, specifically *strategic* insights regarding the leverage of a unified working class over their employers and government.

That they do this, however, is precisely because what is being considered here is an abstract political economy of *material* things. One may imagine a coat (one of Marx's favourite examples) or steel or wheat or a widget or whatever one wishes; in each case, however, the brute, recalcitrant materiality of what is being imagined (and its production process and the *labour* involved) are both inescapably obvious *and*, indeed, a major aspect of what the Marxian critique aims to highlight; namely how there is a crucial distinction between a seemingly immaterial 'exchange value' and 'use value' and it is work, not finance, that builds the latter on which the former's realization for a profit unilaterally depends.

An abstract account of this political economy is thus necessarily tethered to the 'real world': both conceptually in terms of the (largely tacit common-sense) irreducibility of the materiality of what is being discussed; and thereby politically, in terms of its permanent thorn, of critique of the appropriation of surplus value from *actual workers*, in the otherwise unblemished flesh of 'fair exchange'.

Seeking to apply the same methodological tactic to the production of 'immaterial' goods, however, immediately collapses – in the process highlighting interesting problems or, at least, boundaries to the application of the conclusions of familiar Marxian critique as universal, realist truths. First, what is happening in this case is that an ontological dualism of material vs. immaterial goods is applied, taking this as an uncontroversial common-sense position. But it is no such thing, as we have seen, given that even quintessential 'immaterial' goods like a song or a memorable quotation are inseparably embodied and circulate only insofar as they are such.

This fallacious ontological dualism, having presumed that intangible things can be examined in their *abstraction* as such – in the way it seems tangible things can be (also mistakenly as it

turns out)[2] – , is then brought together with a form of *abstract* analysis that inflates further the 'free-floatingness' of its object of study. Abstract analysis of the production etc… of that which is already conceptualized as purely ideational ends up positing and then analysing the equally ethereal circulation of these idealized confections.

As such, this analysis also finally dispenses with the crucial difference between a Marxian analysis and mainstream economics, namely the starting point *not* of idealized first principles but a given, sociohistorical and political meso-level problem. That there is no contact between 'Information' and the material world, which affords appropriability, is not a *conclusion*, in other words, but is a presumption *written into* the conception of what is being analysed and how that analysis should proceed. And it is a fallacious one too.

Let us return to this point now. The usual set of examples for the proliferation of 'Information' and their unappropriability concerns information-rich consumer goods, like music, journalism or books, films or television programmes etc.. We may take as read that it is perfectly well-understood in all cases that the increasing ease of circulation of these phenomena is dependent upon their digitization and the construction of the internet and its ready, popular accessibility. These conditions alone would not go far towards rejection of the claims that Information 'wants to be free' and increasingly *is* so, since these infrastructures are now in place and are not going away.

No doubt a lot of money is invested and made in all these sectors. That it is increasingly difficult to police circulation of the expensively-produced outputs is indeed a serious challenge to all these industries; challenges to which they have responded, as one would predict from 'information economics', by trying to impose and/or extend intellectual property rights and by raising technological walls to access. The success of these ventures is never assured and the future of journalism, music and film remain issues of considerable anxiety for many, especially (but not just) people in these industries. We will return to these examples shortly.

Take, though, a different example of more specialized forms of knowledge, such as B2B products like specialized legal or financial or engineering advice and the texts or outputs that convey this. Such products are evidently 'information' and, indeed, extremely information-intensive in their production. They are also major parts of the 'knowledge economy' and are themselves being affected and 'disrupted' in various as-yet-unclear ways by the same processes of technological dispersal of the (mobile) internet and interactive and social ICTs. However, considering (meso-level abstractions of) these kinds of 'information' immediately raises a host of objections to the highly abstract picture of 'Information' as commodities.

[2] I will not go into this point here, though it is relevant to the argument made below about the misreading of Marx's labour theory of value. Read more appropriately as a value theory of labour, however, it is clear immediately that a Marxian analysis of the capitalist production of *material* things in such ontologically dualist terms is equally problematic, because it is manifestly nothing about the specific materiality of these commodities that sets their exchange value. Indeed, the whole point and dynamism of the capitalist mode of production lies in its capacity to harness but *abstract from* material quality and specificity so that all things may be compared in the quality-free terms of value (and price). But this is only possible because the capitalist production of material things and their *valorization* is itself a thoroughly *socio-cultural* process. In other words, the material-ideational dualism breaks down just as much when analysing Marx's 19th century factories – as condition of the intelligibility of this critique – as it does when analysing 21st century production of 'Information'.

First, it is clear that being able to consume the use-value of such specialized 'information' itself requires significant expertise and embodied and/or institutional investment in 'knowledge' in a way that is easy to miss for consumer entertainment, produced precisely in order to be as readily consumable by as large a market as possible. This is evidently *not* the case, though, for medical or scientific papers informing the medical or technical professional, legal counsel or architectural or engineering diagrams.

Costs of reproduction of such information, therefore, depend not just on the technical (and no doubt fast-falling) costs of reproduction of a memo or a piece of advice (the photocopier and scanner + email are hardly new technologies now), but just as much on the costs of their reproduction in a form consumable by their intended consumer *and* of the costs of maintenance by that consumer of the capacity to consume it.

Such information may also be highly specific and thus of great pertinence or confidentiality to a specific client but irrelevant and/or intelligible to others: after all, the primary use-value in B2B work of such knowledge products and services is that it offers the 'consuming' business a competitive advantage, and specifically regarding earning more exchange value. In such circumstances why would *these* consumers (as opposed to individual consumers of entertainment and information) circulate the knowledge product for free? There is no reason to suppose that any of these costs are falling quickly and inexorably nor that reasons for consumers *not* to reproduce are disappearing; and certainly none that follows from the economics of an abstract Information.

This, in turn, points to a condition of knowledge or information more generally and its economic use, namely its dependence, in basically all cases, on forms of tacit knowledge. Tacit knowledge may take several forms, but in all cases it qualifies and overwhelms the idea of 'free-floating' information, perhaps to the point of negligibility; the tip of the iceberg of knowledge societies.

First, use of all forms of knowledge, including even enjoying a film or a song (consider the price of tickets to Glyndebourne or Bayreuth), depend upon embodied and possibly specialized forms of understanding that are not evenly distributed. These in turn may require significant investment of time and money, by individuals and/or institutions.

As such, and secondly, an explicit and easily reproducible 'text' as expression of a piece of information may be quite useless on its own, since, like a treasure map, it can only be read – can only reveal its full use-value – to those specific persons or institutions holding the tacit key to their meaning.

Moreover, this is not necessarily a deliberate strategy of commercial or governmental secrecy – though, of course, it is undoubtedly that too, as in the quintessential case of the patent. For the 'missing piece' may simply be an embodied and highly experienced expertise; as with the adept laboratory scientist who is explicitly engaged in the creation of *public knowledge* but with skills that are very hard to reproduce by others.

Furthermore, and turning this on its head, all kinds of highly-skilled and specialist capacities for 'knowledge' or 'information' production and manipulation can attain (always depreciating) quasi-monopolies, ranging from the financial guru to the wit to the trendspotter to the hairstylist to the wizard engineer; that is, precisely, they can and do appropriate information.

Finally, since knowledge never circulates without a physical substrate, such that the extent to which it does or can do so is entirely dependent upon the 'technological' mediation of that circulation, much of this tacit information may be embodied technologically in that medium in ways that at least significantly retard its limitless circulation. Thus embedded, access to information may also be policed, since these physical technologies are evidently *not* non-rival and costless to reproduce (not least because of the tacit knowledge needed for their production).

And, of course, there are businesses and individuals and governments that are doing all they can – experimentally, and more or less successfully, no doubt – to take advantage of all the foregoing processes of appropriation to maintain their privileged status and management of desirable information. Returning to journalism, film and music, for instance, while unquestionably under pressure, it remains far from clear that business models even for these archetypes of 'free information' are not being successfully developed.[3]

Taken altogether, therefore, instead of an ever-growing balloon of information flowing free from the moorings of appropriable uniqueness and physicality, we see a highly dynamic landscape of incalculably numerous agents in a restless process of attempting to get free access and attempting with equal vigour to prevent it. This analysis, to be sure, gives no answers regarding a seemingly inexorable 'ultimate' outcome of this process. But this is its strength, not its weakness, sending us back to the inescapably messy and open meso-level of *actual* jockeying that is the *actual* political economy of 'information', instead of offering implausible and exaggerated tales about an undated but supposedly inevitable future.

What about Informationalization?

But there is an obvious and important objection to this criticism of Information economics that Mason nicely spells out. We start with the mediation by material technologies and how they are obviously *not* costless to reproduce. But is this so obvious? And does this still, in fact, hold? In presenting this argument (in so many words) Mason raises the bar for discussion of how the information revolution threatens to transform capitalism – something he can only do because he draws a Marxian distinction between exchange value and use value.

We argued above that all information has a physical and/or technological substrate. What is afoot now, though, as Mason explains, is the opposite process: how innovation is increasingly layering information onto even the most brute physical output in a bid by individual capitalist agencies to 'add value', uniquely associated with and so appropriable by them, to what is the fast-diminishing value of production of physical products. This is a self-reinforcing and recursive process, and one that actually deploys precisely the dynamics of competition discussed in the last section.

Start with factory production of physical things: in an age of proliferating information and its embodiment in technology, including even pivotal B2B technologies like machine tools, setting up a factory becomes increasingly easy and competition becomes increasingly cut-

[3] Who is served and benefits, and who loses out by these models is another – albeit crucial – question; but one, ironically, sidelined by leaping to the conclusion that capitalist production of these key public and cultural goods is doomed.

throat, fighting over falling margins (and across the world given globalization – itself co-produced with the information revolution).

Seeking to preserve their profitability and corporate survival, therefore, businesses 'tool up' further, accelerating the treadmill. They also seek to escape competition by creating quasi-monopolies over their physical products by increasingly shifting the use-value from the brute physical thing (with its diminishing exchange value) to the 'unique' offerings associated with its informationalization, whether by way of associated services or specialized networks of data collection or proprietary software or branding or…, all of which offer something more, something 'informational', to their consumer.

But, of course, this is true not just of the producers of physical products reaching the consumer, but also further up the chain, regarding producers of the (robotized, massively hi-tech) machine tools, and of the tools for their production in turn. Informationalization thus percolates inexorably across the entire economy, transforming the very meaning of 'physical' goods and shifting the primary locus of value increasingly from the tangible to the intangible elements of the balance sheet.

As even hi-tech hardware falls in cost of reproduction, therefore, banking on the dependence of all information on a physical substrate as an absolute, non-crossable limit to falling prices and the collapse of market-based coordination is shown to be a false hope. Indeed, in this respect, we are confronted again by the problematic idea of a 'real' ontological distinction between the physical and the immaterial, that it is especially important to repudiate if we are to understand the full revolutionary dynamism of capitalism. For this dynamism lies precisely in the ontological agnosticism of capitalism implicit in the foundational dualism of exchange value vs. use-value.

The growth of capitalism is dependent on the production of commodities with use-value (or why else would they be bought?), but it cares not one whit what that use-value is, and only and entirely that it realizes maximum exchange value, and thereby maximum profit. While 'material reality' thus undoubtedly presents continual frustrations to the successful realization of profit, these are always and only obstacles to be got round in whatever way presents itself. And this includes regarding even supposed physical (or even planetary) limits. In similar vein, the 'value' of a commodity tells us absolutely nothing about its use-value to us as (socio-technically situated, sociable, corporeal) human beings.

Taken altogether, then, the need for agricultural produce and even potable water, while physically limited on the one hand and objectively necessary for human survival on the other, tells us nothing about the exchange value of these things. While, conversely, the dynamism of capitalist competitive innovation, and now its deepening informationalization, foreshadows a tendency to their ever-diminishing cost; for Mason, to the point that scarcity falls away altogether *given* the free circulation and self-propagating fecundity of 'information'.

In this looming scenario, then, the costs of the reproduction of even *physical* stuff falls away – physical stuff that increasingly wears an informational signature –, leaving naked (and so compounding) the challenges of diminishing costs of the reproduction of Information. Thus arises the death spiral of capitalism. For the only way out of this is a quantum acceleration in innovation. Yet the very dynamics of the information explosion, setting the horizon of innovation – in terms of its use-value aspect –, and of falling information *and* material costs –

in terms of exchange-value – (together with their recursive mediation through falling wage-based demand, as informationalized, interconnected, learning machines replace labour and falling costs reduce the exchange value of the wage), push this innovation acceleration increasingly out-of-reach.

On the one hand, the forefront of innovation demands and depends upon accelerating *free* circulation and collaboration of knowledge. But what is thus necessary in terms of use-value and to the benefit of an individual capitalist is increasingly destructive in terms of the system of exchange value and the price mechanism. The result is the unstoppable emergence of the 'free machine'.

Mason (p.172-5) also considers some ways out of this pickle that may present themselves, but argues that they too are out of bounds. These are: monopoly pricing; maximizing capture of (positive) externalities; deliberately maintaining "artificially high prices for energy and raw materials… so their cost fed through into higher average" wages (a kind of political monopoly pricing); the making of new ("micro-") services, and markets for them; and creating millions of new jobs for those whose previous work has been automated. While implicit, he also argues that the emergence, by way of these mechanisms, of a new 'techno-economic paradigm' *beyond* the information revolution would also stem the tide.

Keeping energy and material prices up (e.g. OPEC), and creating millions of new jobs are relatively self-explanatory. Regarding the others, though, monopoly pricing ("think Apple, Microsoft and Nikon/Canon") would relieve pressure by using corporate and/or legal power to prevent prices from falling. Maximizing capture of externalities, of which there are legion in information economies, is the classic strategy of web 2.0 giants, such as Amazon, Google and Facebook: providing 'free services' that are then massively and voluntarily used, but monetizing and appropriating the resulting big data sets, turning the non-paying consumer themselves into the unwitting product. Finally, micro-services refers to the emergence of multiple new ways in which capitalist relations of production extend into aspects of our lives that we have previously done for ourselves or for others for free.

Mason sees evidence of all these being attempted at present, but argues that "there are clear structural obstacles" to them working together in the successful construction of an information capitalism. First, Mason makes an interesting point regarding the *qualitative* novelty of the information revolution: that whereas the revolutionizing of the means of production by steam, and then electricity and chemicals etc… (see next blog) produced technologies that could in turn be transcended and left behind (as in canals giving way to steam trains giving way to petrol-based automobility etc…), the information revolution has irrevocably informationalized all economic processes and products. It may be possible to go 'beyond' it with new vistas of innovation as-yet unimaginable to us, but it will not do so by leaving informationalization behind. To the extent, therefore, that the death spiral of capitalism is written into the very essence of Informationalization, even the emergence of such system transformative information will not escape it.

Secondly, though, and more directly addressing the list he provides, are the sheer scale of the challenge of building new sectors and sources of employment, and of an employment that leads to a renewed *increase* in the overall wage bill, and hence wage demand, set against the constant acceleration of job *destruction* by Informationalization. And, thirdly, following André Gorz – and addressing the issues of growing monopoly power, capture of externalities and micro-services – is the objection regarding how much more profoundly everyday

personal life would have to be commercialized, accepting the alien imposition of corporate power in our very biographies, for this to be possible. To these we might also add that attempts to ramp up yet higher monopolization by intellectual property rights actually kills the golden goose of open collaboration upon which the big innovations depend, and/or is probably undermined or overwhelmed in any case by non-capitalist entities pursuing such collaboration.

So, let's stake stock. Flipping the argument that information needs a physical substrate on its head, Mason presents a compelling argument:

- that amidst an information revolution – revolutionizing the means of production in familiar capitalist fashion but this time via their deepening informationalization – both Information *and* its physical substrates (which is increasingly *all things*) fall inexorably in marginal costs of reproduction leading to the final dialectical revenge of use-value over exchange value, slave and master respectively, and the emergence of an economy of the 'free machine', 'free labour' and material abundance;

- that the seeming way out of this, of more and faster and more profound innovation, simply deepens and accelerates the problem; and

- that seeming ways to stem the tide are also blocked by the sheer scale and speed of the change unleashed by Informationalization.

Add to this both the highly-charged normative case made against emergence of an information capitalism *and* the no-less longed for case of what will emerge in its place, and you have an argument, and indeed a vision, that will no doubt persuade many. Unfortunately, however, the objections to the possibility of information capitalism are still wrong.

Round a Second Time (1): Problems for Neoliberalism not Capitalism

Key to the continuing weakness of this analysis is the way in which it remains built upon the economics of Information and the presumption that the marginal costs of reproduction of all information products and services tend swiftly to zero (are 'born free', as above). Indeed, notice how the preceding rejoinder responds to the idea that information needs a physical substrate (this then being revealed to be, in itself, no objection), *rather* than directly to the more general problems of conceptualizing the questions in terms of 'Information'. But these have not gone away. In particular, where information does *not* always and in all cases tend to *zero* marginal cost, the significant insights of Mason's account may be accepted without this leading to the same hyperbolic conclusions.

In other words, it is great that Mason sees (as many do not) how *innovation* – and specifically innovation under conditions of informationalization – is key here and is so as a political economic, and not just a technological, process. And thus Mason is also insightful regarding how profoundly informationalization threatens to challenge and transform not just the technological furniture of life, but rather *the very mechanisms and institutions of political economic order* and, indeed, the selves living those lives. And hence we should also register

gratitude for such a compelling account of the profundity of the dysfunction of contemporary attempts to 'innovate' out of the political economic mess.[4]

But with a less abstract and totalizing concept of information, it emerges that the qualitative change augured by informationalization is not so total as to make capitalist coordination by markets impossible. And, conversely, that the contemporary systemic dysfunction thus pertains to the specific, globally dominant but faltering meso-level regime of capitalist accumulation, neoliberalism, and its institutionally entrenched 'common-senses' rather than to capitalism *per se*.

We take these points in reverse order, since showing the socio-historical specificity of the challenges Mason points out illuminates the broader point regarding the continuing possibility of information capitalism.

We first note that the kind of (informational) innovation that is proving so self-defeating and dysfunctional is specifically *labour*-substituting, hence feeding the treadmill of informationalized robotization of jobs and the downward spiral of progressive expulsion of value-creating labour (and wage-based demand) for capitalism. This is a particular characteristic of the *neoliberal* model of innovation (emergent from a specifically American history of industrial relations, in which the perennial problem. in this country built on immigration, has been labour shortage not surplus) not *capitalism*. To the contrary, it is perfectly conceivable, and historically the case, that a regime of capitalist innovation may also privilege the substitution and cheapening of capital, not labour, in profitable ways, and the enormous growth and concentration of waged labour that is its concomitant: witness the Industrial Revolution.

(Even the possibility of) Privileging capital- vs. labour- substituting innovation, however, would transform (analysis of) the current predicament. First, capital substitution would aim to make expensive procedures and equipment cheap for mass demand – today not just for other businesses and industries but also (primarily) for end-consumers – hence escaping the trap of low profits by seeking a quantum *step up* in both demand and information-intensiveness of the product, rather than a quantum *step down* in labour costs. As such, this business strategy seems particularly appealing to businesses competing on global markets from countries with massive reservoirs of cheap (and possibly relatively skilled) labour, rather than those with expensive labour and cemented technological leads in expensive hi-tech. But these also happen to be precisely the engines of economic growth in the early 21st century (notwithstanding how they are also currently being sucked into the economic malaise of neoliberalism's prolonged death throes).

[4] Indeed, the ongoing debate framed in terms of whether innovation is today accelerating at breakneck and socially-destructive speed or winding down, with all the low hanging fruit gone, into a secular stagnation perfectly captures this dysfunction. This is not the place for extended explanation, but what is generally missed in this debate is that both are right and *each is dependent on the other*, not opposed analytical possibilities, since both are mutually reinforcing outcomes of the dysfunction of the neoliberal innovation model. Hence, on the one hand, with an increasingly narrow framing for innovation, labour-displacing 'Tech' is booming; while, on the other, all other kinds of innovation, including those that might actually stimulate a broader and productive reshaping of society, are starved of resources of all kinds – economic, political, human capital and time. Yet these mutual dysfunctions reinforce each other in a destructive positive feedback loop. The result is a system that can present itself as a historical whirlwind of 'disruption' while making but the *slightest* of impacts on the actual growing system problems facing humanity and, indeed, attacking productive industries, intellectual and material, that could make some difference.

This could then set up positive feedback loops of cheap service labour and capital-substituting 'disruptive innovation'[5] tapping mass low-wage demand, while also reducing individual wages indirectly through falling costs of the wage basket but creating jobs, growing the *overall* wage bill and so also demand for these very services. Here, then, this could stall or even reverse the process of 'innovation' always preferring to cut costs by labour substitution.

Capital-substituting innovation thus injects, from a low-base to be sure (and lower than middle or even working class wages in the Global North)[6], growing wage-based demand and labour value that is the engine of capitalist growth. Moreover, as the hi-tech, proprietary and expensive labour-substituting innovation norm of neoliberalism increasingly struggles to reproduce itself and its advantages, the advantages of low-cost capital-substituting innovation will likely become increasingly apparent, precipitating a generalized shift to the dominance of this model: one that is already underway, indeed, as in GE's 'reverse innovation' programme.

Secondly, informationalization and information-based competition does not unduly complicate this process. There is no reason in principle that informationalization must privilege the substitution of labour rather than capital, though from a position of current common-sense it may seem that it does: informationalization being adopted precisely in order to facilitate the cutting of labour costs. But this is to put the cart before the horse.

Informationalization may just as easily be conceived as affording competitive advantages through making a vast array of complex information-rich products cheap and widely accessible, and of enabling unprecedented capitalist control of (relatively highly, but designated 'semi-') skilled labour to provide this. Consider, for instance, a competitive advantage in the appropriable (viz. tied to a particular corporation) externalities of a networked- and semi-skilled labour force combined with centralized (and disciplining) data processing. This is precisely what is happening, for instance, in India regarding call-centre labour or outsourced IT services or even now heart surgery. Shifting to this model of innovation, therefore, turns informationalization from a cataclysmic threat to the capitalist growth engine into a massive new landscape of entrepreneurial opportunity.

2) It is thus the specific innovation model, sedimented within and (socio-technically and politically) reproducing the specific regime of neoliberalism, that presents the obstacle here, not capitalism *per se*. Neoliberalism, as do all regimes of capital accumulation, is deepened and propagated by sponsoring a specific form of innovation, which then in turn enables new agents that, as beneficiaries of neoliberalism, support its continuing political dominance. As I have written at length elsewhere, this model of innovation privileges development of products for corporate/individual consumers (not states or publics) that promise large short-term financial return and the extended monopolization of hi-tech (and hi-tech-appropriated) sectors through highly proprietary global IPRs.

[5] I need to clarify the use of this term briefly. Here I use it in its strict sense as first described by Clayton Christensen, in terms of cheaper and/or easier-to-use products that may initially have reduced functionality vis-à-vis existing norms but open up new markets that may come to overwhelm those of existing technologies. The language of 'disruptive', however, has more recently been entirely colonized by a Silicon Valley 'Tech' discourse of anything based on the internet that promises to topple old industries. The former suggests forms of innovation that are strikingly inimical to the neoliberal model, as we describe here. The latter is premised upon – even the climax of – that neoliberal rentier model, albeit often donning the garb of a 'sharing economy'.

[6] The potential importance of the *non*-Western class forces (and not just the working class) is a crucial oversight elsewhere in Mason's analysis (see next blog).

In all these respects, then, neoliberalism co-produces an innovation model that is unable to support large-scale and systemic socio-technical change – of the kind Mason says an information capitalism would need – but instead is locked into labour-substituting and informationalized innovation – of the kind Mason describes. But this is a problem for neoliberalism, not for capitalism.

Consider, for instance, the 'escape routes' discussed above and their current foreclosure as Mason sees it. For instance, monopolization and monopoly pricing, especially of innovations, is a classic tactic of neoliberal corporations, as the list provided by Mason illustrates. Yet it becomes increasingly problematic as generating the use-value of innovation comes to depend on broader collaboration with peers and competitors. But there is nothing essential to capitalism, as opposed to neoliberalism, regarding the sanctity of highly proprietary intellectual property rights, for instance. Indeed, as the bell-weather of capitalist opinion, *The Economist*, exemplifies in recent editorials, there are increasingly strident calls to revise and open up – but not scrap – the US patent system, so that such collaboration, *but also the appropriation of the resulting spoils*, becomes easier.

Similarly, the argument that there is a natural human limit to the amount of commercialism we will accept in our lives is a form of cultural critique of capitalism that is as old as the recognition of capitalism itself. Yet, while it remains compelling as a dystopian critique, it has to date been proven as wrong just as much as it has been proven right, if not more so. And this not just because of the nefarious persistence of the expansion of capital in the interstices of human life and our weak-willed, greedy, short-sighted acceptance of this; but just as much because any such expansion is indeed highly contested, resulting in subtle but important qualitative shifts in the form of its intervention into human lives that render it palatable, if not welcome, at least for (a powerful) some (*Cf* the work of Viviana Zelizer).

I hasten to add, that none of this should be read in praise of this process. I seek here neither to critique (*à la* critical theory) nor glorify (like Niall Ferguson) this process – but it is just the way the process has indeed unfolded historically. While the specific form of novel intervention of new services, or capture of externalities as prosecuted by a neoliberal corporate common-sense that faces massive popular rejection, may be impossible – as in the PR disasters of a new Facebook or Spotify privacy policy –, therefore, it simply does not follow that similar political economic processes cannot be successfully introduced *at all*.

Together, then, these two points illustrate how the key objection that Informationalization means the inevitable destruction of the wage form, and thence of coordination through the market, holds for *neoliberalism* not capitalism *per se*. The shift from L- to K- substituting innovation and the possible shift to a new socio-technical and political regime of capital accumulation together present the *impossibility* of a neoliberal information capitalism *and* the conceivability of a major political economic reorganization, *of* and *within* capitalism, with many new waged jobs.

Round a Second Time (2): Capitalist Markets of Knowledge Labour Power

To really see how informationalization does not challenge, and yet may rejuvenate capitalism, however, we must attend directly to their interaction. This leads us to confront the second major theoretical problem in Mason's account, regarding his (mainstream Marxist) analysis of the labour theory of value.

Let us start by considering the key problem as Mason presents it from informationalization to capitalism. This is, in fact, not so much the progressive substitution of value-creating labour by informationalized machines, but rather the quantum and unstoppable acceleration in the rate of devaluation of marginal costs of reproduction of which that is a medium. Yet it is here that the importance of the exaggeration of information into the abstraction 'Information' is crucial. For where there are diverse manifestations of information-rich goods and services, and these are embodied, institutionalized and dependent upon equally diverse forms of tacit knowledge that necessarily are appropriable (and indeed always appropri*ated*), it follows that in the vast majority of cases marginal costs of reproduction may well now be falling at an *accelerated* rate and yet they neither fall *precipitously* nor do they fall to *zero*.

Such seeming pedantry, however, is crucial. For this utterly transforms the predicament confronting capitalism: from an imminent slippery-slope and totalized collapse of the price mechanism (i.e. regarding all things that are (capital I) Informationalized = all things); to a disparate, piecemeal acceleration of the devaluation of particular information-rich products, where this devaluation still has a specific (not infinite) velocity that also differs from item to item, service to service.

This informationalization (lower case i) undoubtedly effects a qualitatively new level of competitive pressure on capitalist enterprises and individual expertise, compelling them to engage further and faster specifically in (information-rich) innovation, leading to a qualitatively new dynamic of capitalist socio-technical change. But capitalism is intrinsically a dynamic mode of political economy, and all that is needed for it to persist is that a profit may be sustained now and in the (always rolling) short-term. Yet compelled into intensified innovation, this is precisely the predicament and strategic purview of the modern capitalist enterprise; indeed, *already* the common-sense. What competitive business today believes they have a future without constant investment in 'innovation'? Similarly, what 'skilled' knowledge worker believes they have a job-for-life (let alone the 'precariat')?

As such, the problem is not whether capitalism can survive informationalization, but whether this accelerated (and still accelerating) rate of change can be kept up with? How fast does technical change have to become, how high the pressure on workers, before we can take no more? And how rapid does *socio-technical and political* change have to be and in *what directions* before society is simply unable to accommodate it 'quickly enough'?

We must first note that these questions are simply not answerable in abstract political economic terms but, again, only from a meso-level perspective of innovation as a political process. In other words the pertinent question is 'can *this* given political economic regime and its social and cultural assemblage abide accelerating innovation and to what point?' Asking this question takes us back to the crucial distinction between neoliberalism and capitalism.

Given the constitutive power relations and knowledge technologies of crisis-beset neoliberalism, the answer to this question seems palpably to be 'no' for that specific regime: thus we would agree with Mason on that score: it *really is* 'kicking off everywhere' in revolt. But regarding capitalism more broadly, the answer is not so straightforward, in that we must enquire into the possibilities of a new capitalist society emerging out of the crises of neoliberalism, incorporating profound socio-political change: of dominant forms of state and

government; of collective and/or class formations and communities; of identities and subjectivities; and of emerging and self-reinforcing and productive trajectories of innovation.

We will consider this question in more depth in the next blog, when we will ask 'what is *likely*, not just possible, regarding information capitalism?'. But let us end here by considering what a reappraisal of the theoretical core of 'capitalism' – the labour theory of value – suggests. This takes us to the last conceptual misunderstanding to be discussed here.

Mason's analysis of capitalism is also premised on this identification with a system governed by the 'law of value'. But the labour theory of value is a notoriously troublesome theoretical argument, such that even many self-identified Marxists reject it. We will not do that. But we do take issue with the interpretration of the theory as deployed by Mason. In this he follows Andrew Kliman, for instance, for whom the question is 'where does value really come from?', to which the answer is labour and only labour, i.e. *not capital*: hence a *Labour* Theory of *Value* (LTV). For Kliman, this leads to analysis in terms of the progressive expulsion of labour by technical innovation and the 'law of the tendency of the rate of profit to fall', meaning the dwindling of the motor of capitalism.

This 'law' is one of a 'tendency' against which there are numerous 'counter-tendencies', given the dynamism of capitalism. Mason's twist, though, is that Informationalization is the killer blow to all counter-tendencies.

On the one hand, Informationalization combined with the LTV together lead inexorably to deepening systemic problems of profitable production, eventually leading to breakdown in the price mechanism. On the other, because value really comes from labour, the construction of a post-capitalist economy premised upon new networked, informational forms of *free* (as in unexploited and/as unwaged) labour (i.e. voluntary contribution amidst growing material and informational abundance) can be easily conceptualized. Conversely, for mainstream economics – long since having abandoned concepts of value and now entirely a construct of market-based supply and demand – the very idea of an economy based primarily on non-waged labour and zero-price commodities is inconceivable. This matters, then, because this analysis can show not just that capitalism dies but that and how it is actively and productively replaced and transcended.

But in both respects this analysis remains wrong. First, Marx's analysis is not a Labour Theory of Value, but (as a critique of political economy) a *Value* Theory of *Labour*. This explores how the specifically *capitalist*, not natural and ahistorical, concept and 'substance' of 'value' can come to be applied to human labour (power) – i.e. how human beings can be successfully classified as commodities –, and thence generalized to an entire system of political economy.

The value of labour (power) thus remains the fulcrum of capitalism on this account. But this is because it is the *valorization of labour power* – a socio-historical and contingent process necessarily mediated by multiple power/knowledge technologies that can, in these given socio-historical circumstances, treat labour power *as if* it were a commodity – on which the generalized expansion of capitalism depends, *not* because something 'real' called 'value' is 'really' produced by (and only by) labour. The key point for our purposes from this difficult but crucial distinction, though, is that it is the wage form, and thus *markets for labour power*, that are the pivot of the generalized coordination of socio-economic activity by markets in search of maximized profit.

If capitalism is fundamentally a system of markets for labour power, though, the key question regarding informationalization vis-à-vis capitalism is whether or not stable (not self-undermining) markets for *knowledge*(-intensive) labour power can conceivably be constructed *under conditions of informationalization*. Both elements of this conceptualization matter here.

On the one hand, it is a matter of the possibility of power/knowledge-technology-mediated valorization of knowledge labour power, *not* one of the whether or not the 'real' value of knowledge labour can be appropriated. And on the other, this is in the context of the diverse and multiple trajectories of actual informationalized products and labour processes, *not* of the hyperbolic and totalized collapse of value of Informationalization.

While the latter thus conditions Mason's answer – that the value produced by knowledge labour increasingly overflows the possibilities of private appropriation, thereby producing an Information (as use-value) commons – however, the former more qualified and meso-level approach invites us to think *with* (the undeniable empirical reality of dynamic, pragmatic and self-seeking) capitalist (-conditioned) agencies, seeking to build or preserve their individual competitive advantage, in the open-ended (and always contested) construction of just such novel means for turning knowledge labour power (including perhaps their *own*) *into* a profitable commodity.

Again, therefore, this approach offers no deducible abstract answers to the outcome of this process. But once framed in this way, it is clear that one can indeed begin to imagine ways in which markets of *knowledge* labour power can be maintained, and indeed enabled, in the context of informationalization.

I close by suggesting two possibilities, regarding 'skilled' and 'unskilled' labour respectively; a distinction that has already dramatically widened over the past decades (see Erik Brynjolfsson & Tony McAfee, or Thomas Piketty for that matter) and, it is widely predicted, will continue to do so.

On the one hand, then, 'skilled' knowledge labour power effectively consists of embodied tacit knowledge and expertise that has a carefully cultivated, and thereby dynamically preserved, quasi-monopoly over its labour power. This can feed a positive feedback loop, in which reputation grows leading to growing contacts and job opportunities, then undeniable experience and (what may be increasingly treated by others as) unique expertise, and so on. Given informationalization, even such expertise must constantly strive to keep up with the changing landscape, of knowledge technologies and knowledge networks etc… But for many, the accelerating depreciation of one's specific knowledge and experience is manageable as against the growing opportunities coming one's way. Here, in other words, we have manageable and self-reinforcing but rapidly depreciating monopolies of 'skilled' knowledge labour power.

On the other hand, however, is the construction of new disciplinary knowledge technologies that allow previously unimagined centralized control over forms of 'knowledge' and/or service work, themselves broken down into discrete and de-skilled tasks, so that they may be subjected to the familiar ratchet of capitalist appropriation of increasing relative surplus value. This is a world of targets and measurement, now applied *precisely by way of informationalized innovations* – of *capital*-substitution and labour *disciplining*, not labour-

substitution – to the labour process of forms of knowledge- (and/or affect- or care-) intensive labour that were previously difficult to discipline in this way. In this instance, therefore, all that is needed to preserve acceptance and *growth* of markets of such 'unskilled' or 'semi-skilled' – and thus also poorly paid – knowledge labour power is a combination of few other options with, conversely, some sense of rising living standards, especially from a low base, as in the significant relative cheapening (through capital-substituting innovation) of desirable but previously expensive knowledge-intensive goods and services.

Insofar as stabilized and highly productive markets of knowledge labour power, of both kinds, may be constructed, therefore, an information capitalism is unquestionably possible. To be sure, as mentioned above, construction and stabilization of both of these types of labour markets may not be possible under *neoliberal* conditions. For instance, the relentless focus on labour-substituting innovation and the unbridled focus on ever-more-concentrated corporate power threatens an unrelenting acceleration of the pace of life and work even for the highly skilled work, to the detriment of the productivity of knowledge labour.

A backlash in this respect is already in evidence, though, with the most privileged knowledge workers already noting that their very productivity and inspiration sometimes demands they take on *less* work and work *fewer* (formal, office-based) hours. Insofar as their profitability is measured in terms of market demand for the resulting 'innovative' knowledge products (e.g. a blockbuster film, the hit song or even their priceless and ingenious legal counsel), however, such workers also thereby *maximize* their productivity in terms of *both* use-value and, more importantly for capitalism, exchange value. A stabilization of a newly productive (in both senses) regime of 'skilled' labour power, seeding system-changing innovations that in turn create massive new openings for 'skilled' jobs, is thus perfectly conceivable.

Low skilled workers, however, have no such opening, their income measured in ever greater detail according to time-worked and concrete deliverables delivered in short time periods. Yet they too may be restabilized, as against the increasingly instability of the neoliberal status quo: e.g. of individuals schooled into demanding self-realization through work and consumption and relatively over-educated for the poorly paid and insecure work that actually presents itself to them, together with the unsustainably high levels of debt taken on to meet the shortfall between incomings and outgoings.

Rather than a newly productive system creating opportunities for slightly slower but massively networked and productive knowledge work, then, here we have the opposite: a generalized shift *downwards* in global norms (at least, vis-à-vis previous ones set in the Global North) for 'working class' 'semi-skilled' knowledge jobs, calling on cheap, mass online education, a plethora of capital-substituting new jobs offering steady if precarious employment and on the condition of acceptance of much greater discipline and measurement by ICTs of one's daily performance.

This is not, to be absolutely clear, a future I welcome at all, much less advocate. But that we can set out such a plausible possible future of information *capitalism* (but not information *neoliberalism*) is all that is needed to show how rushed and overstated are Mason's conclusions regarding the imminent and necessary demise of capitalism as it grapples with the information revolution. To the contrary, as we will discuss in the next blog, even the semi-skilled knowledge work jobs will very likely have significant appeal to the burgeoning masses of the populous and fast-developing 'Global South', actively aspiring to move further

‘up the ladder’ from peasants, to factory workers, to a self-identified white-collar middle-class status.

In these circumstances, then, far from capitalism being on its last legs, it is possible that it is just beginning its most world revolutionary age. The key here, though, is the differentiated, concrete meso-level innovation of (informationalized) technologies to enable capitalist markets of knowledge labour power, not the abstract political economic ‘contradictions’ of Information and the Labour Theory of Value.

The next blog in this series will discuss the second set of criticisms, regarding the Kondratiev long wave theory and the ‘stalled’ arrival of the next ‘upswing’.