Where did all that stuff come from?

Marx, surplus profit, and the seemingly inexhaustible rise in the productivity of labour in capitalist production

> '[...] [E]verything is expressed upside down in competition, and hence in the consciousness of its agents [...].'[1]

Summary

In *Capital*, Marx argues that, in a given sector of production producing a given class of commodity, should one capitalist production unit introduce a productive technique based on a higher level of productivity of labour than that obtaining in the rest of the sector, that production unit will be able, through lowering the per-unit value of its commodity product, to reap a surplus-profit – a rate of profit higher than the sectorally-obtaining rate. Marx strongly suggests that the ability to reap this surplus profit is why capitalists introduce more productive techniques in the first place (even though, once introduced, competition between production units forces the adoption of the new technique through the sector, and the innovator's advantage disappears). Given that Marx imputes to capitalist reproduction a constant and consistent rise in the level of labour productivity, and given that this secular rise explains the key characteristics of capitalist reproduction itself (accumulation, the tendency of the rate of profit to fall, the very unstable dynamism of capitalist reproduction), the quest for surplus profit must lie at the heart of what is constitutive to capitalist production and reproduction. It is surprising, therefore, that the literature commenting on Marx's theory almost in its entirety attributes the drive to adopt innovative and more productive techniques to *competition*. I reject this argument, and insist that, for Marx, it is the quest for surplus profit that drives capitalists to adopt innovative production techniques, not competition.

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[1] Karl Marx, *Capital*, vol. 3 (Harmondsworth, 1981) [hereafter C3], p. 331.

The productivity of labour

Throughout *Capital*, Marx assumes as inherent to capitalist production and reproduction a constant and continuous rise in the productivity of labour. 'Capital […] has an immanent drive, and a constant tendency, towards increasing the productivity of labour, in order to cheapen commodities […].'[2][3]

What 'productivity of labour' means here is the quantitative relation between the physical mass of commodity product produced and the physical mass of labour (measured in time) required to produce it.

> By an increase in the productivity of labour, we mean an alteration in the labour process of such a kind as to shorten the labour-time socially necessary for the production of a commodity, and to endow a given quantity of labour with the power of producing a greater quantity of use-value.[4]

If, for example, ten workers, working a fixed working day, produce x units of a commodity product in a given production period, and then, in a subsequent one, they produce $2x$ units, the productivity of labour will have doubled.

The productivity of labour may be raised in a number of different ways. Labour may be intensified, i.e. workers may be made to work harder. The basis of production itself may be reorganised on a more rational basis, technically, socially and spatially. Workers may be replaced by machines. However, given the technical basis of production, each of these methods has its own natural limits: there is a natural limit to how hard workers can be made to work, and still be able to function as workers; given the technical basis of production, there is a limit beyond which no further rational reorganisation can reasonably occur, and, again given the technical basis of production, there is a point beyond which no more workers may be replaced.

Given these limits, there is another way the productivity of labour may be increased – historically by far the most important. Machinery may be replaced by more productive machinery, more productive in the sense that, in a given time, and for a given mass of labour, it is capable of producing a greater mass of commodity product.

The productivity of labour and socially necessary labour time

For Marx, the value of a given mass of commodity product is given by the labour, measured in time,[5] socially necessary (i.e. given the socially obtaining technical conditions of production, including the prevailing level of the productivity of labour) for its production. The labour socially necessary for the production of a given commodity product breaks down into two components: that labour time socially necessary in the actual production process from which the commodity product emerges; and that past socially necessary labour time embodied in the means of production used up in production – in the raw materials transformed into commodity product, whose value is passed on to the product in function of their transformation, and in the machinery, factory spaces, etc. (collectively 'instruments of labour'),

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[2] Karl Marx, *Capital* vol. 1 (Harmondsworth, 1990) [hereafter C1], pp. 436-7.

[3] '[...] [The capitalist mode of production's] historical mission is ruthlessly to expand the productivity of human labour, to drive it onwards in geometrical progression. It is untrue to its mission as soon as it starts to inhibit the development of productivity […].' C3, p. 371.

[4] C1, p. 431. 'To say that there is an increase in productivity is the same as saying that the same raw material absorbs less labour in the course of its conversion into the product, or that the same labour time requires more raw material for its absorption.' *Karl Marx Frederick Engels Collected Works* [hereafter CW] vol. 33, p. 133.

[5] Hence 'abstract labour', labour – productive human activity – considered abstracted from its qualitative properties.

whose value is passed on to the commodity product in function of the rate at which they are used up (worn out) in production.

It is important to grasp that a given mass of labour-power (number of workers, given the duration of the working period) produces the same amount of new value in production if it operates under socially necessary conditions independently of the given level of productivity of labour. Hence, a rise in the productivity of labour spreads the same amount of socially-necessary labour more thinly over a greater mass of commodity product, lowering the per-unit value.

This fall in per-unit value, however, is not directly proportional to the rise in productivity, for it is also dependent on the ratio between means of production and labour-power in production.

For example. Imagine that 10 workers, working for a given production period, represent the socially necessary labour time to produce 100 units of a given commodity. We can use as a unit of account labour time itself, or a monetary equivalent.[6] Let us denominate the new value produced by the 10 workers as M40, 40 units of unspecified currency M; and that to produce the 100 units of commodity product 60 units of raw materials are transformed, each unit costing M1. Let the depreciation of instruments of labour (which we shall take as consisting in the production machinery only) over a year's production stand at M20. The value of the year's commodity product (100 units) thus stands at M20 (depreciation of instruments of labour) + M60 (raw materials) + M40 (new value created in production) = M120; per-unit value = M1.20 .

Now assume a rise in the productivity of labour: the machinery is replaced by a new, more productive alternative, which costs the same, experiences the same straight-line depreciation, but which is capable of transforming 25 % more raw material into finished product with the same amount of labour-power (all else remaining the same). Now, instead of M60 of raw material being transformed into 100 units of commodity product, M75 of raw material is transformed into 125 units of commodity product. Now, the value of the (125 units of) commodity product stands at M20 + M75 + M40 = M135, and the per-unit value $\frac{135}{125} = \text{M}1.08$.

Raising the productivity of labour to reap a surplus profit

Capitalist production is production for profit: compared to the capital value laid out at the start of production the realised commodity product value needs to be greater. The source of profit is the fact that the value of the reproduction of the labour-power expended in production – the socially necessary labour time embodied by the commodities that make up the real wage (which includes, Marx notes, a 'historical and moral element',[7] beyond mere subsistence) – is less than the new value it creates in production. If we denominate this latter as l, and the value of labour-power as defined above (which is equivalent to the capital value laid out as wages) as w, then the difference, $l - w$, gives us a surplus-value, appropriated by the capitalist, whose phenomenal manifestation is profit, p.[8]

What determines the *magnitude* of profit is the ratio between the excess of new value created in production over the capital value laid out as wages and the value of the wages laid out themselves, a

[6] Price is the phenomenal manifestation of value; that price (expressed in exchange, i.e. determined *ex post facto*) and value (created in production, determined *ex ante*) will never in fact coincide, except accidentally, need not concern us here, since non-coincidence of value and price only results in is a transfer of value in exchange, and thus lies theoretically outside our purposes here.

[7] C1, p. 275.

[8] Further distributed among capitalists in addition to profit as rent and interest.

ratio that Marx calls the 'rate of exploitation' or 'rate of surplus-value'.[9] If we set this ratio here to 1 : 1 , then, in both of the cases set out above, assuming stable real wages and prices, and assuming the commodity product is realised at its value, for each M20 laid out as wages, a further M20 accrues to the capitalist as profit: in the first case M20 (depreciation of instruments of labour) + M60 (raw materials) + M20 (wages) = M100 is laid out, and a commodity product (100 units) of M120 is produced; in the second M20 (depreciation of instruments of labour) + M75 (raw materials) + M10 (wages) = M115 is laid out, and a commodity product (125 units) of M135 is produced.

In both cases, M20 accrues to the capitalist as profit. But what capitalists are most interested in is the *rate* of profit: the *percentage return* on capital advanced. Taking the instruments of labour in both cases to consist in the machine alone, and assuming a straight-line depreciation, with no change in price, then, in both cases, the cost of the machine (which will need to be replaced after ten years) stands at M200. If we denominate this as C_i, and assume a one-year production period, and as c_r the value of raw materials transformed in this production period; and further imagine, for the sake of simplicity, that wages are paid annually, at the outset of the production period in question, then this gives us for the annual rate of profit $\Pi = \frac{p}{C_i + c_r + w}$. After each (one-year) production period under the first set of socially necessary conditions outlined above, a commodity product of M120 is produced; assuming the successful realisation of the commodity product, this M120 flows back to the capitalist in the form of money, and is divided up in the following way: M20 is allocated to a depreciation fund, which will be used to replace the machine when it is worn out; M60 is used to purchase the next batch of raw material; M20 is relaid out as wages. M20 remains as profit. Under these conditions, this gives us an annual rate of profit of $\frac{20}{200+60+20} \approx 7.14\ \%$.[10]

But what happens should one capitalist in a sector of many capitals producing the same product under these conditions of production introduce the production technique which would allow her to transform 75 units of raw material into 125 units of commodity product? The conditions of social necessity are set by the rest of the sector; the per-unit value of the product remains at M1.20. If our innovating capitalist manages to sell her product at this price, and the socially necessary value of the product is stable over the life of the new machine, for each year of the new machine's life she realises a product of the value of $125 \times$ M1.20 = M150 . Upon realisation, this value is allocated as M20 (capital depreciation fund), M75 to purchase more raw material, and M20 as wages. This leaves an annual profit of M150 – (M20 + M75 + M20) = M35. With a capital outlay of 200M (C_i) + M75 (c_r) + M20 (w) = M295, her rate of profit now stands at $\frac{35}{295} \approx 11.86\ \%$.

Of course, as Marx points out, increasing the physical supply of commodities means that our innovating capitalist will have to sell below her product's socially necessary value, since, all else remaining equal, increased supply will overshoot existing social demand. But she can still sell above her commodity product's actual value (M1.08) while selling below the socially necessary value, and still

[9] Cf. C1, pp. 668ff.

[10] Note that the annual rate of profit is given as the ratio of the sum of surplus-value (here, profit) produced of the course of the year (in this case equal to the production period) to the *total* value laid out as capital – i.e. including the *full* value of instruments of labour, not just that part used up in the production period(s) in question – laid out at the beginning of the production process. What the annual rate of profit suggests in this case, which is most probably how the capitalist herself will actually see it, is a capital investment of M280 returning a fixed non-compounded annual yield of 17.14 % over an indefinite period. Cf. C3, chapter 4 (in fact written by Engels).

realise a surplus profit.[11] Indeed, Marx is explicit that this is, in fact, her motive for introducing the technological innovation in the first place. 'This augmentation of surplus-value [i.e. profit above the sectoral average] is pocketed by the capitalist himself […]. Hence, […] there is a motive for each individual capitalist to cheapen his commodities by increasing the productivity of labour.'[12]

It is important to understand that this is not exactly how the capitalist perceives matters. Rather than originating from unpaid (surplus) labour, from the capitalist's point of view profit originates from capital itself – all capital, instruments of labour and raw materials included – and her own wit and ingenuity: it is constitutive of capitalist production and reproduction for Marx that it disguises the true nature of its operation. Nevertheless, raising the productivity of labour through the introduction of technological innovation is a perfectly rational act, since what motivates the capitalist above all else in production is raising the rate of return on capital advanced, however she understands the origin of this last to be, and lowering the per-unit price of her product to below that of her competitors allows her to do exactly that.

The effect of intrasectoral competition

Thus once innovation has occurred, the producing unit implementing it is able to reap a greater than sectoral average rate of profit, and is able – if not obliged – to undersell competing units. Competition now forces these competing units to adopt the new method of production, and in this way this is generalised through the sector.

> The law of the determination of value by labour-time makes itself felt to the individual capitalist who applies the new method of production by compelling him to sell his goods under their social value; this same law, acting as a coercive law of competition, forces his competitors to adopt the new method.[13]

Once the new more productive method of production has been generalised, the conditions of production in the whole sector will have changed. The per-unit value of the commodity product will now stand at M1.08 (the price it would have had had our innovating capitalist sold her product at value). What has happened is that the labour socially necessary for its production has been reduced, and anyone failing to produce at this level of socially necessary labour will quickly be priced out of the market. At the same time, the same force that acted on our innovating capitalist, to lower unit costs, and so reap a rate of profit above the sectoral average, acting continuously on all production units, will ensure that the process repeats itself *ad infinitum*. Hence the constant and continuous rise of the productivity of labour throughout capitalist production.

The inexorable rise in the productivity of labour as constitutive to capitalist reproduction

Perhaps it is important to note that the positing of a constant rise in the productivity of labour is no mere theoretical caprice on Marx's part; raising the productivity of labour, producing increasing quantities of ever cheaper per-unit commodity product is precisely what has happened over the

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[11] In *Capital* volume 1, Marx uses a numerical example in which the physical quantity of commodity output is doubled. '[T]he working day of 12 hours is now represented […] by twenty-four articles instead of twelve. Hence, in order to get rid of the product of one working day, the demand must be double what it was, i.e. the market must become twice as extensive. Other things being equal, the capitalist's commodities can only command a more extensive market if their prices are reduced. He will therefore sell them above their individual but below their social value […]. By this means he still squeezes an extra surplus-value […] out of each.' C1, p. 434.

[12] C1, pp. 434-5.

[13] C1, p. 436.

historical period and in the geographical zone in which production has been carried out on a capitalist basis. Where not so long ago, historically speaking, an 'ordinary' person would have needed little more than a large handcart to transport their worldly goods from one place to another, we now live in a world in which we are all surrounded by ever-increasing quantities of manufatured stuff, with all the consequences for sustainable social development that this brings.

Yet, in Marx's theory, the constant and continuous rise in the productivity of labour that he describes is not just incidental to capitalist production: it functions as the very *engine* that drives capitalist production and gives it the character that it has. Three constitutive facts of capitalist reproduction confirm this.

First. Imagine a production unit within a given sector of production which produces 10,000 units of commodity product at the pre-innovation level of socially necessary labour described above (and we shall maintain the simplifying assumptions made previously). The outlay of capital at the outset of a (one-year) production period stands at: M20,000C_i (100 machines) + M6,000c_r + M2,000w = M28,000. Production continues on this basis for ten years, until the machinery is worn out, and needs to be replaced, and is in fact replaced by the new, more productive machinery described above. At the beginning of the next production period, the capital outlay will stand at: M20,000C_i (100 new machines) + M7,500c_r + M2,000w = M29,500. M1,500 *more* capital is laid out at the beginning of the first production period in which the new technique is introduced compared to that first under the old technique. Where does this extra capital come from? Either directly or indirectly from the profit – surplus-value – produced under the old conditions (over the ten years producing under the old conditions a total of M2,000 profit will have accrued to the production unit in question). In other words, in order to carry out production at a higher level of labour productivity, previously-produced surplus-value, rather, on realisation, being unproductively consumed by capitalists, is accumulated as new capital. Reproduction takes the form of *expanded* reproduction. Accumulation occurs. This is a necessary and inevitable consequence of increasing the level of the productivity of labour, and is true not only for the innovating capital but for all capitals in the sector as competition drives the technical innovation through. Marx is explicit on this.

> We now come to reproduction. Assume that the capitalist consumes the entire surplus-value [...] and reconverts only the original capital sum [...] into productive capital. [...]
>
> This assumption is equivalent to assuming the non-existence of capitalist production and therefore the non-existence of the industrial capitalist himself. For capitalism is already essentially abolished once we assume that it is enjoyment that is the driving motive and not enrichment itself.
>
> It is moreover also technically impossible. The capitalist [...] must accumulate capital, in order to extend production and incorporate technical advances into his productive organism.[14]

Second. The annual rate of profit is the expression of the ratio of the sum of surplus-value produced over the course of a year to the stock of capital advanced at the beginning of the first production period. Although the innovating capital is driven to innovate in order to reap a surplus profit, this surplus profit is available only temporarily, for, once the innovation is forced through the sector by competition, not only can she no longer sell below socially necessary value, but the rate of profit, all else being equal, must also fall.

If, assuming a one-year production period, the annual rate of profit is given by $\frac{p}{C_i + c_r + w}$, before the introduction of the technological innovation described above it stands at $\frac{20}{200+60+20} \approx 7.14\ \%$,

[14] Karl Marx, *Capital*, vol. 2 (Harmondsworth, 1978), p. 199.

and after at $\frac{20}{200+75+20} \approx 6.78\ \%$. The rate of profit has fallen. And it has fallen because of a rise in what Marx calls the 'organic composition of capital' – a rise in the value ratio of the capital laid out on raw materials and instruments of labour on the one hand compared to that laid out as wages on the other because of a rise in the physical mass of capital in the form of raw materials and instruments of labour compared to the physical mass of labour-power deployed in production – i.e. directly because of the increase in the level of labour productivity.[15] 'But competition makes the new [more productive] procedure universal and subjects it to the general law [of the determination of value by socially necessary labour time]. A fall in the profit rate then ensues – [...] a fall that is completely independent of the capitalists' will.'[16]

This phenomenon, which Marx calls the 'Law of the Tendential Fall in the Rate of Profit', described in detail in chapters 13 to 15 of *Capital*, volume three (and elsewhere), is, in Marx's words, 'the most important law of modern political economy, and the most essential one for comprehending the most complex relationships'.[17]

Third. If we assume, on the one hand, a stable rate of exploitation – i.e. relatively stable real wages, a relatively stable ratio between that part of new value created in production equivalent to that value necessary to reproduce labour-power and that part which accrues to capital in the form of profit; and, on the other, that, between sectors of production, the ratio of capital laid out as instruments of production and raw materials compared with wages will vary (that different sectors of production will deploy more or less labour intensive production processes), then it is inevitably the case that the rate of profit, $\frac{p}{C_i + C_r + w}$, will vary across sectors, with those sectors with a higher weight of capital in the form of instruments of labour and raw materials compared to wages exhibiting a lower rate of profit and those with a lower weight a higher one.

But, again, capital betrays its weakness for a higher, and not a lower, rate of profit. In function of its mobility – in function, in other words, of its existence in the form of what Marx calls 'interest-bearing capital' – capital will be attracted to those sectors where the rate of profit is higher, and repelled from

[15] Cf. C1, p. 762; C3, p. 245. 'The rise in the rate of surplus-value and the fall in the rate of profit are simply particular forms that express the growing productivity of labour in capitalist terms.' C3, p. 347. It can be argued (e.g. Michael Heinrich, *An Introduction to the Three Volumes of Marx's Capital* (New York, 2004), pp. 149-54) that a rise in the productivity of labour does not necessarily provoke a fall in the rate of profit since a rise in the productivity of labour, which will cheapen produced commodities, will also cheapen those commodities that enter into production as raw materials and instruments of labour, as well as those that make up the real wage.

Since the rate of profit, using my notation, is given by $\frac{p}{C_i + C_r + w}$, the argument has it that if real wages, on the one hand, and instruments of labour and raw materials, on the other, are cheapened sufficiently, then the numerator, p, may rise, and the denominator, $C_i + C_r + w$, may fall, raising the rate of profit. This argument is, in my opinion, wrong. The cheapening of commodities as a consequence of a rise in the productivity of labour has an *indirect* effect on the rate of profit, since it occurs *subsequently* in time to the rise in productivity that causes it. The change in the value composition of capital because of a rise in the ratio of instruments of labour and raw materials to wages is immediate: more capital is laid out as the former compared to the latter. But the cheapening of commodities that occurs as a consequence is the cheapening of the commodity product output of a more productive production process; it is only in *subsequent* production periods (and iteratively) that these cheaper commodities affect the value composition of capital. I demonstrate this theoretically and arithmetically here: <https://edgeorgesotherblog.wordpress.com/2013/07/04/but-still-it-falls-on-the-rate-of-profit/>.

[16] C3, p. 374.

[17] CW vol. 29, p. 133.

where it is lower.[18] But if capital flows into a given sector, production there will increase relative to other sectors, and supply of commodity product will increase relative to social demand, lowering the commodity's per-unit market price below its socially necessary level, reducing the rate of profit. The reverse happens in those sectors where a lower rate of profit provokes disinvestment: the flow of capital out of these sectors reduces production relative to other sectors, reducing supply relative to social demand, raising market prices above their socially necessary level, and raising the rate of profit.

Were there no change in the productivity of labour, were social supply and demand fixed, were, abstracted from capital flows, the prevailing profit rates given, capital flow would eventually create an equilibrium state where the rate of profit would be the same everywhere, and capital flows would stop. But if the productivity of labour is constantly and continuously increasing, if producing units are endlessly looking for ways to reduce per-unit prices, if, as a consequence, both the physical and the value ratios of the dead and living labour components of capital are in constant flux, and if, also as a consequence, the rate of profit is inherently unstable, with all the consequences that this will have for social supply and demand, socially necessary labour, and market prices, there is no given equilibrium state, for such a state could never be *fixed*. The mechanisms towards the equalisation of the rate of profit thus constantly push reproduction towards an equilibrium which is itself constantly moving and which it can thus never reach. This is the source of the 'restlessness' of capitalist production and reproduction, of, seen from one point of view, its dynamism, and, seen from another, its instability. And, again, what drives this process is the inexhaustible tendency of the level of the productivity to rise.

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To summarise. Capitalist production and reproduction proceed through the constant and continuous raising of the social productivity of labour. This is not incidental to capitalist reproduction, but the motor force behind the features that are constitutive of it: it explains accumulation, the capitalisation of surplus-value as additional capital; it explains the tendency of the rate of profit to fall; and it explains the very unstable dynamism of the system. But why does capital consistently strive to raise the productivity of labour? Because individual capitals are driven to reduce per-unit prices. But why are individual capitals driven to reduce per-unit prices? Because of the 'motive for each individual capitalist to cheapen his commodities by increasing the productivity of labour' since this produces a surplus profit which 'is pocketed by the capitalist himself […].' This is the explicit answer Marx gives to the question as to why capitalists endlessly seek to implement more productive techniques of production: the quest for a surplus rate of profit.

But when we turn to the commentaries on Marx and his theory in the literature, however, we see something strange. The standard answer given to the question as to why capitalists innovate is that it is the fact of *competition* that compels capitalists to introduce more productive production techniques. To cite some representative examples of this near ubiquitous explanation:

> [T]he extraction of surplus value under competitive conditions leads to continuous productivity enhancing technical change under capitalism. [...]. Competition causes accumulation, accumulation creates competition. Those who fall behind in the accumulation process are destroyed. The need to

[18] Through mechanisms described in detail by Marx in chapter ten of the third volume of *Capital*.

> accumulate is felt by each individual capitalist as an external coercive force. Accumulate or die: there are few exceptions.[19]

> The capitalist 'is only capital personified' and 'capital has one single life impulse . . . to absorb the greatest possible amount of surplus-labour' (p. 233).[20] [...] There is a division among Marxists between those who regard it as self-evident that capital, in the abstract, can be described in such anthropomorphic terms, and those who regard such statements as metaphors describing the consequences of a process of competition between capitalists in which each must extract the maximum surplus-value in order to survive in competition with others.[21]

> [...] Marx's central point is that competition impels capitalism towards perpetual revolutions in the productive forces by whatever means of whatever sort. Capitalists compete with each other in the realm of exchange. Each has the possibility to alter his own production process so that it becomes more efficient than the social average. This is a source of relative surplus value to them. Once the competitors have caught up, the original innovators have every incentive to leap ahead once more in order to sustain the relative surplus value they were previously capturing. There is plenty of opportunity here, of for the enterprising, imaginative and individualistic entrepreneur – that inspiring and noble individual so important to the folklore of capitalism and so frequently depicted as the sole fount of its technological dynamism.
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> The social consequence of competition is, of course, to force continuous leap-frogging in the adoption of new technologies and new organizational forms independent of the will of any particular entrepreneur – provided, of course, markets remain competitive.[22]

> Thus does competition compel capitalists (always have in mind, 'capitalist' refers not necessarily to an owner of capital but to capital personified) [...] to join in the increase in productivity initiated by another capitalist, even if at an individual level they have no interest in an increasing valorisation of capital. The *intrinsic laws of capital*, such as the tendency toward lengthening the workday and the development of productivity, are independent of the volition of individual capitalists. These laws impose themselves as *iron laws of competition*. Since each individual capitalist is familiar with this pressure, he normally does not wait until it is imposed upon him by his competitors, but instead attempts to be the first to increase productivity so that he can at least have some of the extra surplus value, instead of just minimizing his losses. As a result, every capitalist puts the screws on all other capitalists, just as he himself is subject to the same pressure. And they all do this by following a blind 'inherent necessity'.[23]

But this argument – that competition alone lies behind the perpetual rise in the productivity of labour – is logically flawed. If capitalist production units are forced to adopt more productive techniques because of competition, that means that other capitalist production units, having already themselves adopted more productive production techniques, are underselling them. But why have these, other, production units adopted more productive techniques? To ascribe to competition the compulsion to adopt more productive production techniques is to assume as given what needs to be explained.

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[19] Ben Fine and Alfredo Saad-Filho, *Marx's Capital* (London, 2004), pp. 69, 86-7.

[20] The quotation (ellipsis in the work cited) is from *Capital* volume one; in a different translation, C1, p. 342.

[21] Anthony Brewer, *A Guide to Marx's Capital* (Cambridge, 1984), pp. 44-5.

[22] David Harvey, *The Limits to Capital* (Oxford, 1982), pp. 120-21.

[23] Michael Heinrich, *An Introduction to the Three Volumes of Marx's Capital*, p. 108.

But the fact is that Marx never actually explicitly says this. Marx *is* explicit, as we have seen, that, once labour-saving techniques *have* been introduced, intrasectoral competition forces their generalisation throughout the sector. [24]

He is also explicit when he attributes to competition the formation of a uniform price on the market for a given commodity, such that producing units operating at below the sectoral level of social necessity by employing more productive techniques achieve a rate of profit above the sectoral average.

> The assumption that commodities from different spheres of production are sold at their values naturally means no more than that this value is the centre of gravity around which price turns and at which its constant rise and fall is balanced out. Besides this, however, there is always a *market value* […] as distinct from the individual value of particular commodities produced by the different producers. The individual value of some of these commodities will stand below the market value (i.e. less labour-time has been required for their production than the market value expresses), the value of others above it. […] If the supply of commodities at the average value, i.e. the mean value of the mass that lies between the two extremes, satisfies the customary demand, the commodities whose individual value stands below the market price will realize an extra surplus-value or surplus profit, while those whose individual value stands above the market price will be unable to realize a part of the surplus-value which they contain. […] What competition brings about, first of all in one sphere, is the establishment of a uniform market value and market price out of the various individual values of commodities. [25]

But he *nowhere* says in so many words that it is competition that forces technical labour-saving innovation in the first place. In Marx's argument, what motivates the implementation of more productive production techniques is the *compulsion to realise a surplus profit*.

> No capitalist voluntarily applies a new method of production, no matter how much more productive it may be or how much it might raise the rate of surplus-value, if it reduces the rate of profit. But every new method of production of this kind makes commodities cheaper. At first, therefore, he can sell them above their price of production, perhaps above their value. He pockets the difference between their costs of production and the market price of the other commodities, which are produced at higher production costs. This is possible because the average socially necessary labour-time required to produce these latter commodities is greater than the labour-time required with the new method of production. His production procedure is ahead of the social average.[26]

The search for a surplus profit propels the *introduction* of more productive production techniques. Competition forces the *generalisation* of these techniques. But it is not competition that forces the innovation. That is how we should understand statements like these:

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[24] 'The capitalist who employs improved but not yet universally used methods of production sells below the market price, but above his individual price of production; his profit rate thus rises, until competition cancels this out A capitalist working with improved but not as yet generally adopted methods of production sells below the market price, but above his individual price of production; his rate of profit rises until competition levels it out.' C3, p. 338.

'As soon as the new mode of production begins to spread, giving actual proof that these commodities can be produced more cheaply, then those capitalists who operate under the old conditions of production must sell their product below its full price of production; the value of this commodity has fallen, so that they need more labour-time to produce it than is socially necessary. In short, and this appears as the effect of competition, they must also introduce the new mode of production which reduces the ratio of variable capital to constant.' C3, p. 374.

[25] C3, pp. 279-81.

[26] C3, p. 374.

> [...] [S]ince production on a large scale developed first in the capitalist form, the profit-mania and competition which compel commodities to be produced as cheaply as possible give economy in the use of constant capital the appearance of something peculiar to the capitalist mode of production and therefore make it seem a function of the capitalist. [27]

Not 'competition' alone, but 'profit-mania' *and* competition compel the ever-cheaper production of commodities, through the specific determinations we have discussed: 'profit-mania' compelling innovation; competition guaranteeing innovation's generalisation.

Further. In his discussion of the Law of the Tendential Fall in the Rate of Profit in volume three of *Capital*, Marx notes that

> Compensation for the fall in the profit rate by an increase in the mass of profit is possible only for the total social capital and for the big capitalists who are already established. New and independently operating additional capital finds no compensatory conditions of this kind ready-made; it must first acquire them, and so it is the fall in the profit rate that provokes the competitive struggle between capitals, and not the reverse.[28]

The line of determination is clear. The fall in the rate of profit intensifies competition. But what provokes the fall in the rate of profit? The adoption of more productive techniques of production.[29] It cannot therefore be that for Marx that it is competition that lies behind the rise in the productivity of labour, for, if this were the case, the result would also act as point of departure:

> Competition can permanently depress the rate of profit in all branches of industry, i.e. the average rate of profit, only if, and only to the extent that, a general and permanent fall in the rate of profit operating as a law is conceivable also *prior to* and regardless of competition.[30]

This is why ascribing to Marx the argument that it is competition itself that breeds the rise the productivity of labour sits so ill with his consistently repeated methodological conception of the place of competition itself in his theoretical exposition: that competition and its effects represent the *manifestation* of the nature of capitalist reproduction, and thus do not *explain* it.

> Competition executes the inner laws of capital; it turns them into coercive laws in relation to the individual capital, but it does not invent them. It realises them. To wish to explain them simply by competition means to admit that one does not understand them.[31]

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[27] C3, 179.

[28] C3, p. 365.

[29] 'The tendency towards a fall in the general rate of profit therefore = the development of the productive power of capital, i.e. the rise in the ratio in which objectified labour is exchanged for living labour.' CW vol. 33, pp. 107-8.

[30] CW vol. 29, p. 136.

[31] CW vol. 29, p. 136. This citation is from the *Grundrisse*. Marx made similar formulations repeatedly in his work. Two further examples will suffice here. From *Theories of Surplus-Value*: 'The competition of capitals is nothing more than the realisation of the immanent laws of capital, i.e. of capitalist production, in that each capital confronts the other as the executor of these laws, the individual capitals bringing their inner nature to bear by the external compulsion which they exert on each other, according to their inner nature. But in competition the immanent laws of capital, of capitalist production, appear as the result of the mechanical impact of the capitals on each other; hence inverted and upside down. What is effect appears as cause, the converted form appears as the original one, etc. Vulgar political economy therefore explains everything it does not understand from competition, i.e. to state the phenomenon in its most superficial form counts for it as knowing the laws of the phenomenon.' CW vol. p. 102. And from the first volume of *Capital*. '[...] [I]t is not our intention here to consider the way in which the immanent laws of capitalist production manifest themselves in the external

The conclusion is clear. In Marx's theory of capitalist reproduction, that capital searches endlessly for surplus profit is a central determinant. It explains why capitalists accumulate. It explains the tendency of the rate of profit to fall. It explains why capitalist production can never reach equilibrium – why, in other words, it is necessarily prone to crisis. Increasing the productivity of labour is immanent to capital, and constitutive of it. And, unlike the explanation given in the greater part of the surrounding literature, it is not competition that explains this property of capital, but capital's own compulsion to reap a profit greater than that already being reaped: a profit above the prevailing average, a surplus-profit.

Capitalists are not, in Marx's theory, driven to accumulate through fear of others' accumulation; they are driven to accumulate by the rationale of converting value in abstract form – money – into ever greater amounts of value. This is what Marx means when he says that capitalists are driven by a 'boundless drive for enrichment':

> Use-values must [...] never be treated as the immediate aim of the capitalist; nor must the profit on any single transaction. His aim is rather the unceasing movement of profit-making. [...] The ceaseless augmentation of value [...] is achieved by the more acute capitalist by means of throwing his money again and again into circulation.[32]

Capitalist production is often depicted as 'production for the sake of profit'. In reality, capitalist production is production for the sake of '*surplus* profit'. All the other characteristics of capitalist production and reproduction flow from this fact.

León,

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movement of the individual capitals, assert themselves as the coercive laws of competition, and therefore enter into the consciousness of the individual capitalist as the motives which drive him forward [...].' C1, p. 433.

[32] C1, pp. 254-5.