

# Marx against Marx: A Critical Reading of the *Fragment on Machines*

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**Abstract:** Marx's *Fragment on Machines* is sometimes held up as a creative departure from orthodoxy, and a prescient harbinger of a knowledge economy. In particular the concept of general intellect, which appears uniquely in the *Fragment*, is celebrated as a key theoretical innovation. This article presents a close reading and critical interpretation of the text of the *Fragment* to argue, firstly, that its primary theme is not general intellect, but fixed capital; secondly, that its emphasis on fixed capital is unduly narrow and productivist, leading to an equally narrow treatment of labour and value; and finally, it seeks to explain why Marx produced this odd work, so much out of step with the main current of his thought, at the time and in the way that he did.

**Keywords:** fixed capital, general intellect, *Grundrisse*, labour, Marx, value.

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## 1. Introduction

Karl Marx's *Fragment on Machines* appears in the *Grundrisse*, written in 1857-8. The *Grundrisse* attracted enthusiastic attention when it became widely available in the 1970s. Negri, for instance, declared it to be: "the summit of Marx's revolutionary thought" (1991, 18); and he singled out the *Fragment* in particular as: "the highest example of the use of an antagonistic and constituting dialectic that we can find, certainly in the *Grundrisse*, but perhaps also in the whole of Marx's work" (1991, 139). Rosdolsky too was struck by the *Fragment*, writing of the "awe and excitement" generated by its "enormously dynamic and essentially optimistic conception" (1977, 425-7).

For Negri, the *Grundrisse* transcended *Capital* and revealed a new "Marx Beyond Marx" (1991). Forty years later it retains its allure, and the *Fragment* has become particularly fashionable, celebrated as a signpost to a Marxist road-not-taken, and as a prescient harbinger of contemporary theories of cognitive capitalism (Dyer-Witheford 1999; Mason 2016; 2019).

However, all too often this enthusiasm for the *Fragment* is based not on the argument which it actually makes, but rather on odd suggestive words and phrases which crop up within it. "General intellect" is the prime example: a term which appears just once in the original text, but which has in recent years underpinned theories of "immaterial labour" (Hardt and Negri 2004; Lazzarato 1996) and the re-imagining of communism itself (Bastani 2019; Dyer-Witheford 2006).

Although the debate on the *Fragment* has at times been heated (Bellofiore, Starosta and Thomas 2014, 1), the present article is not a review of that debate. Instead it goes back to the source, to the text of Marx's *Fragment*. It presents a close and critical reading of the text, paying particular attention to those words and phrases which excite some of his present-day interpreters. And inevitably, this critical reading

brings us up against its eccentricity, because as both critics and enthusiasts have observed (Heinrich 2014; Mason 2016) the *Fragment* is radically at odds with the broad body of Marx's work, out of step with the "continuing meditation" (McLellan 1973, 303) which characterises the main current of his thought from the *Paris Manuscripts* through to *Capital*.

This faces us with a choice. We may choose to embrace the *Fragment* – but we should be clear that the price of doing so may be to distance ourselves from much that is precious in Marx's thought. Or we may choose to hold on to the main body of his work, and the continuity which characterises it – in which case we may find that the *Fragment* is a case not of "Marx Beyond Marx" but rather 'Marx *Against* Marx'. But whichever choice we make, we surely owe it to Marx himself to try to understand what he was up to when he sketched out this odd, brief piece of work.

The first two sections of the current article address the question of the *Fragment's* primary theme. The first section summarises the overall argument and submits that its primary theme is fixed capital; while the second section examines the place of general intellect in the *Fragment's* argument, and finds that it is of secondary importance. Having established fixed capital as the *Fragment's* primary theme, the article then goes on to examine the implications of this for other key categories. The section on 'Labour and Value' compares their treatment in the *Fragment* with their treatment elsewhere in the *Grundrisse* and in *Capital*. 'Machinery and Workers' compares Marx's discussion in the *Fragment* with that in Chapter XV of *Capital*. And in the final section, 'Explaining the Fragment', the article offers some suggestions as to why Marx produced this strange piece of work in the way, and at the time, that he did.

The article therefore makes use of the "'retrospective' reading strategy" which other writers have adopted in interpreting the *Grundrisse*, using *Capital* as a point of departure to revisit the earlier work (Bellofiore, Starosta and Thomas 2014, 3-4). More specifically, it uses this approach to argue that the *Fragment* must be understood within its own creative moment, as a piece of writing committed to paper by Marx as part of a larger text, and as part of a larger process of self-education.

## 2. Fixed Capital

The *Grundrisse* ('Outline' or 'Plan') is a collection of notebooks in which Marx resumed his economic studies, which he had put aside for some years, in response to the international crisis which broke out in 1857 (McLellan 1971, 7). These notebooks were never intended for publication, but were solely for his private use. Understandably, therefore, they read quite differently to his published works. The *Grundrisse* is not carefully composed, corrected or cross-checked. It is loose, free-wheeling, with broad themes constantly re-visited from different directions and in different registers. Arguments and categories seep out in the course of repeated passes and iterations, edging towards clarity. Marx's state of mind while working on the *Grundrisse* has been variously characterised as "frenetic and genial" (Bellofiore Starosta and Thomas 2014, 3), and "inspired intoxication" (Liedman 2018, 372).

The passage which has come to be known as the *Fragment on Machines* was written by Marx in February 1858. The title, however, is not his. *Fragment on Machines* is the English rendering of the Italian *Frammento sulle Macchine*, coined by Renato Solmi for his translation of the passage published in *Quaderni Rossi* in 1964 (Rovatti 1973, 56 [Footnote 1]). Solmi's title is regrettable, because the whole thrust of Marx's argument is that 'machines' in the plural – standalone tools and simple devices – are being replaced by an "automatic system of machinery" (Marx 1973, 692) in the form of fixed

capital. *Fragment on Machinery* would have been a more appropriate title, but *Fragment on Machines* is what we have.

The *Fragment's* argument can be summarised as follows: In its drive to increase the proportion of surplus labour-time relative to necessary labour-time, and thus to increase the magnitude of surplus-value produced, capital transforms the labour process, replacing individual-skills-based means of production – hand tools and simple devices – with fixed capital in the form of an “automatic system of machinery” (Marx 1973, 692):

[...] it is in the production of fixed capital that capital posits itself as end-in-itself and appears active as capital, to a higher power than it does in the production of circulating capital (Marx 1973, 710).

Marx is of course talking here about a moment in capital's development to which he would return repeatedly in later years, the moment when absolute surplus-value gives way to relative surplus-value, and when the formal subsumption of labour is replaced by its real subsumption. But these terms do not appear in the *Fragment*.

The *Fragment* argues that, faced with a mass of fixed capital, the individual worker ceases to be an active agent in production, and “steps to the side” to become merely a “watchman and regulator” (Marx 1973, 705). The driving force in production comes instead from fixed capital itself, by virtue of its absorption of the skills of living labour (1973, 693); of the “general productive forces of the social brain” (694), and of “general scientific labour, technological application of natural sciences” (700).

But this is ultimately self-defeating because:

Capital itself is the moving contradiction, in that it presses to reduce labour time to a minimum, while it posits labour time, on the other side, as the sole measure and source of wealth [...] On the one side [...] it calls to life all the powers of science and of nature [...] to make the creation of wealth independent (relatively) of the labour time employed on it [...] On the other side, it wants to use labour time as the measuring rod for the giant social forces thereby created (Marx 1973, 706).

In other words: although fixed capital may temporarily increase the magnitude of surplus-value through its absorption of workers' skills and of scientific and technical knowledge, it can only achieve this by undermining the significance of labour-time as such, which in turn undermines the measurement of value, without which capital cannot survive.

The understanding of labour and value which animates the *Fragment* is therefore quite different from that set out in *Capital*, and from that which appears elsewhere in the *Grundrisse*. Labour in the *Fragment* is emphatically concrete, human effort expended on physical production. And value follows suit; value in the *Fragment* arises entirely from the act of production, as a property of goods produced by concrete labour under capitalist conditions. These issues are discussed in more detail in Section 4 below.

The essential point for present purposes is that the *Fragment* envisages a final crisis of value arising from a double imbalance within the domain of physical production. Firstly, there is an imbalance between the great mass of fixed capital and the shrunken remnant of labour-time. And simultaneously, within that shrunken remnant of labour-time, there is an imbalance between a narrow sliver of necessary labour-time, and an overweening bulk of surplus labour-time. The *Fragment* argues that this creates

the conditions for surplus labour-time to be re-imagined as *disposable* labour-time or 'free' time:

The more this contradiction develops, the more does it become evident that the growth of the forces of production can no longer be bound up with the appropriation of alien labour, but that the mass of workers must themselves appropriate their own surplus labour (Marx 1973, 708).

The primary theme of the *Fragment* is therefore fixed capital: an inter-connected apparatus of productive machinery, turning out more and more surplus-value represented by more and more physical goods. Although the *Fragment* also refers to circulating capital, it does so in order to stress its separation from fixed capital:

While, up to now, fixed capital and circulating capital appeared merely as different passing aspects of capital, they have now hardened into two particular modes of its existence (Marx 1973, 702).

And it is fixed capital which is "the most adequate form of capital as such" (Marx 1973, 694), by virtue of its absorption of the practical skills of living labour, and of the scientific knowledge of society as a whole, enabling it to posit itself as a direct source of value. But as we have seen, Marx argued that by doing so, fixed capital undermines labour-time, which is the real source of value, and thus brings about its own demise as capital.

In making this argument, Marx showed little interest in the nature of the goods produced by fixed capital; or in their exchange as commodities; or in the realisation of the value represented by them. He focused instead on the fact of physical production. This one-sided productivism, which pervades the *Fragment*, is entirely out of step with Marx's wider body of work, including much of the rest of the *Grundrisse*. For instance, in its *Introduction*, he was very clear that production is just one part of a wider whole:

The conclusion we reach is not that production, distribution, exchange and consumption are identical, but that they all form the members of a totality, distinctions within a unity (Marx 1973, 99).

Finally, given the centrality of fixed capital in the *Fragment*, it is important to appreciate that in later years Marx came to regard it as an inadequate, "mere[ly] formal" conception. In the first volume of *Capital* he wrote:

I must here remind the reader that the categories 'variable and constant capital' were first used by me. Political Economy ever since the time of Adam Smith has confusedly mixed up the essential distinctions involved in these categories, with the mere formal differences, arising out of the process of circulation, of fixed and circulating capital (Marx 1954, 572 [Footnote 3]).

But the *Grundrisse* was produced almost ten years before *Capital*. At the time of his work on the *Grundrisse*, Marx was still working with both sets of terms. He had not yet made a distinction between constant and variable capital as theoretical categories predicated on the hidden presence of value on one hand, and fixed and circulating capital as pragmatic, empirical notions concerned with the allocation of resources within a business on the other (Heinrich 2004, 137). Hence fixed capital's status as the *Fragment's* primary theme.

### 3. General Intellect

One of the defining features of fixed capital in the *Fragment* is its absorption both of practical skills and of scientific and technical knowledge. “General intellect” is one of several terms used by Marx to refer to this knowledge:

[...] the general productive forces of the social brain (1973, 694);

[...] the technological application of science [...] the tendency of capital to give production a scientific character (699);

[...] the general state of science and [...] the progress of technology [...] the application of this science to production (705);

[...] general social knowledge [...] general intellect (706).

Science and knowledge are referred to repeatedly in the *Fragment*, but Marx was interested in them only insofar as they are absorbed into, and contribute to, fixed capital:

The accumulation of knowledge and of skill, of the general productive forces of the social brain, is thus absorbed into capital, as opposed to labour, and hence appears as an attribute of capital, and more specifically of fixed capital, insofar as it enters into the production process as a means of production proper (1973, 694).

In other words, fixed capital absorbs knowledge not in order to produce more knowledge, but in order to produce an ever-greater quantity of physical goods as the bearer of an ever-greater magnitude of surplus-value.

However, for many years some writers have insisted that general intellect is the *Fragment's* primary concern. They claim that the *Fragment* places general intellect centre-stage, as a new and transformative force of production, looking ahead to a post-industrial or post-capitalist, knowledge-based society. Thus, for Dyer-Witheford, the vision laid out in the *Fragment* “is eminently recognizable as a portrait of what is now commonly termed an ‘information society’ or ‘knowledge economy’” (1999, 221). For Vercellone, the *Fragment* announces “a new stage of development in the division of labour. It is here that Marx speaks of the ‘general intellect’ in order to characterise the impact of this change on the division of labour and on technical progress” (2007, 18-19). In Virno’s view the *Fragment* argues that “abstract knowledge (primarily but not only scientific knowledge) is in the process of becoming nothing less than the main force of production and will soon relegate the repetitious and segmented assembly of the production-line to a residual position” (2007, 3). And according to Mason, the *Fragment* claims that “knowledge becomes a productive force in its own right” (2016, 134).

These writers take different positions in other respects, but on this particular topic, on the significance of general intellect in the *Fragment on Machines*, their positions are similar. After allowing for some exaggeration (such as Virno’s assertion that the *Fragment* anticipated the demise of the assembly-line, despite being written decades before Fordism), their argument boils down to two essential points: firstly, that general intellect is something new, called into being by the developments described in the *Fragment*; and secondly, that it is a powerful and transformative force of production.

Marx referred to general intellect, and identified it as a force of production, just once. The relevant sentence runs as follows:

The development of fixed capital indicates to what degree general social knowledge has become a direct force of production, and to what degree, hence, the conditions of the process of social life itself have come under the control of the general intellect and been transformed in accordance with it (Marx 1973, 706).

If this sentence is taken by itself, it is tempting to interpret it as identifying general intellect (or “general social knowledge”) as a new force of production destined to transform and control social life. But a more careful, contextualised reading reveals a rather different meaning.

The sentence quoted above appears at the end of a passage in which Marx emphasised the “monstrous disproportion” between the labour time employed and the “real wealth” created by fixed capital (1973, 705). He rounded off the discussion in a paragraph which begins:

Nature builds no machines, no locomotives, railways, electric telegraphs [...] These are products of human industry; natural material transformed into organs of the human will over nature, or of human participation in nature. They are organs of the human brain, created by the human hand; the power of knowledge objectified (706).

This is followed by the sentence which we have already quoted: “The development of fixed capital indicates [etc.]”. The overall train of thought is therefore:

1. Machines are products of human ingenuity and skill;
2. Through machines, human knowledge has already been applied to the transformation and control of nature;
3. Through fixed capital, human knowledge may transform and control “the process of social life itself” (706).
4. The development of fixed capital reveals the degree to which this is actually happening.

Marx was clearly saying that something new is going on; that there is an historic shift from an extrinsic transformation of the natural world to a reflexive transformation of the human world. And he was saying that a new factor is present which makes this shift possible. But the new factor is not general intellect. General intellect as such is a constant; every human society has its particular general intellect, its own characteristic body of general social knowledge. The new factor is fixed capital, an unprecedented apparatus of machinery which absorbs and mobilises human knowledge and skill in ways which no previous technology was able to do. Once more, therefore, the *Fragment's* emphasis is upon fixed capital: general intellect matters only by virtue of, and to the degree that, it has been absorbed into the body of fixed capital.

However, this reading appears to contradict the *Fragment's* clear identification of general intellect as “a direct force of production” (Marx 1973, 706). How can a category which is merely secondary also hold the status of a force of production? In fact, there is no contradiction, once we understand what Marx meant by the terms “force of production” and “productive force” in the *Fragment* and the *Grundrisse*.

Our understanding of these terms draws on a century and a half of theorising, as a result of which “force of production” or “productive force” has become, for us, a significant and high-level theoretical category; high-level in the sense that it is predicated upon, and is understood to articulate, the relations between other key categories,

namely instruments of production, raw materials, and labour power. So, when we come across a reference in the *Fragment* which identifies general intellect as a “direct force of production”, this suggests to us that it is marking general intellect as enormously important, as a new articulation of production as such.

But this was not what Marx meant by the term when he was writing in the 1850s. He referred to “productive forces” several times in the *Fragment*:

The increase of the productive force of labour [...] is the necessary tendency of capital [...] (1973, 693);

The productive force of society is measured in fixed capital [...] (694);

[...] science too is one of those productive forces [...] (699);

[...] the general productive force arising from social combination [...] (700);

[...] large industry’s productive forces [...] (703);

Real economy – saving – consists of the saving of labour time [...] but this saving [is] identical with the development of the productive force (711).

In these examples Marx used the term “productive force” in a variety of ways: as an aspect of a productive factor; as an acknowledgement of the contribution of a productive factor; and as a reference to the *pressure* or *intensity* of production as such. And beyond the *Fragment*, elsewhere in the *Grundrisse*, we find yet more variations. In the *Introduction* Marx referred to the “[d]ialectic of the concepts productive force (means of production) and relation of production” (1973, 109) which offers “productive force” as a synonym for ‘means of production’. And elsewhere he wrote: “Thus the more developed capital already is [...] the more terribly must it develop the productive force” (1973, 340) which again uses the term as a marker of overall productive intensity.

The fact is that in the *Fragment*, and more widely in the *Grundrisse*, Marx’s use of the terms “force of production” and “productive force” was decidedly loose. He used them not with analytical rigour, but rather for rhetorical effect, to emphasise the scale, or power, or significance, or speed, or intensity of the matter under discussion, whether it be labour, or science, or social combination, or industry, or capital itself. The *Fragment*’s identification of general intellect as a “direct force of production” is therefore entirely compatible with its secondary status *vis à vis* fixed capital. It is an acknowledgement that general intellect matters; but the broader context, beyond this single sentence, makes clear that it matters *because of* its absorption by fixed capital.

#### 4. Labour and Value

According to the *Fragment*, by progressively increasing the mass of inter-connected machinery, fixed capital increases the ratio of surplus labour-time to necessary labour-time, and thus holds out the promise of ever-increasing surplus-value; and by the same token it undermines value as such. The argument is superficially compelling, but nevertheless misleading because it works with a flawed conception of value. It roots value entirely within the domain of physical production, as if it were a property of each individual object produced under capitalist conditions, measured by the concrete quantifiable labour-time invested in it.

This productivist notion of value is out of step with the understanding of value evident elsewhere in the *Grundrisse*, and in the *Contribution to the Critique of Political*

*Economy* which Marx wrote just a few months later. But our primary point of reference, if we wish to grasp his considered conception of value, must be *Capital*, in which Marx stressed the primacy of the *commodity-form*, and *exchange-value*, and the inseparability of exchange-value from *abstract labour*.

At the heart of *Capital's* critique is the double character of capitalist products, and the double character of the labour that produces such products: goods produced under capitalist conditions are both use-values and commodities, and the labour that produces them is both concrete and abstract. It is concrete insofar as it produces an object with practical utility; and it is abstract insofar as that same object is also a commodity, a value, seeking exchange with other commodities and values.

Value is conventionally described as having been 'produced' or 'created' by labour, but to use the language of production with reference to value, as opposed to the goods by which value is represented, is to invite the mistake that the *Fragment* makes. It implies that value is a substance or property of each individual product, acquired in the moment of production, and retained thereafter. But value is not a substance created by an act of production; it is a *relation*, *posited* by it, in order to seek its own realisation through an act of exchange. And if realisation fails to occur, then the posited value ceases to be. It is cancelled or liquidated, and loss or bankruptcy or crisis is the consequence.

It follows that value presupposes not just capitalist production and wage-labour, but a "world of commodities", a broad array of social institutions and practices through which the values represented by goods seek exchange with other values:

The general value-form, which represents all products of labour as mere con-  
gelations of undifferentiated human labour, shows by its very structure that it is  
the social resumé of the world of commodities (Marx 1954, 72).

Value arises not from production alone, but from the *totality* of production, exchange and realisation; and its presence signals the presence of "undifferentiated" or abstract labour.

Abstract labour is labour's social form: 'social' because capital's sociality lies not in production, but in exchange. Where concrete labour is tied to the moment of production, to time and place and product, abstract labour is out communing in the marketplace. And yet this has nothing to do with the rich possibilities of human sociality, with encounters between friend and friend, parent and child, teacher and pupil, or lover and lover. Abstract labour belongs solely to the encounter between buyer and seller; it is social only in the miserable sense that an exchange of commodities implies an encounter between their owners. It represents the fetishized, alienated sociality of a society in which "the social relations of individuals [...] appear in the perverted form of a social relation between things" (Marx 1970, 34).

Heinrich characterises abstract labour as a "relation of social validation" (2004, 50), and so it is, but what it validates is a perversity, a validation of value by value.

Commodity production, commodity exchange, warped sociality, and alienation are therefore bound together in value, and in parts of the *Grundrisse* Marx was clear about this:

The reciprocal and all-sided dependence of individuals who are indifferent to one another forms their social connection. This social bond is expressed in *exchange value*, by means of which alone each individual's activity or his product becomes an activity and a product for him [...] The individual carries his social power, as well as his bond with society, in his pocket [...] The general exchange



of activities and products, which has become a vital condition for each individual – their mutual interconnection – here appears as something alien to them, autonomous, as a thing. In exchange value, the social connection between persons is transformed into a social relation between things [...] (1973, 156-7 [emphasis in original]).

This anticipates *Capital's* understanding of value to a striking degree; all that is missing is abstract labour, a category which Marx had not yet developed. However, a very different understanding of value animates the *Fragment*. In the *Fragment*, Marx offered a narrower view, in which labour is straightforwardly concrete; value is straightforwardly created by labour during production; and capital's crisis arises exclusively within the domain of production, without reference to commodity exchange or value realisation.

## 5. Machinery and Workers

At another level, the *Fragment's* emphasis on capital's productive materiality – on fixed capital, physical production, concrete labour – presents a paradox. Despite its relentless focus on the material fact of production, the *Fragment* contains no discussion of any practical manifestation of this materiality in the form of some particular machinery, factory, or industry. And it makes no reference to the distinction between individual capitals and capital-in-general. The *Fragment* presents a vision of capital as an abstract, singular, unitary social power.

This emphasis on capital-in-general is, to be fair, a feature of the *Grundrisse* more generally. Rosdolsky lays great stress on the *Grundrisse's* primary concern with capital-in-general. In summarising the content of the "Rough Draft" (his term for the *Grundrisse*) he says:

[...] the Rough Draft is basically confined to the analysis of 'capital in general', and thus consciously disregards many problems which were not dealt with thoroughly until *Capital* itself (1977, 13).

This goes some way to explain Negri's immediate enthusiasm for the *Grundrisse* in the 1970s. In his view, it adopted a perspective in which "capital is immediately social capital" (Negri 1991, 53). He found this perspective highly congenial, given his own background in *operaismo* (Pitts 2016), which attuned him to a vision of capitalism as a 'social factory', and to a vision of diverse anti-capitalist resistance. And in the years since, Negri has been remarkably consistent, continuing to argue that there is a unitary social power, whether it goes by the name of 'social factory', 'planning', or 'Empire'; and that it is subject to diverse revolutionary challenge, whether by the 'working class', 'multitude' or 'immaterial labour'.

In the *Fragment* itself, however, the revolutionary agency is far more narrowly conceived. It consists of those workers who are retained to service and regulate the apparatus of fixed capital, and thus contribute labour-time to production: labour-time which is unevenly divided between a sliver of necessary labour-time and a bulk of surplus labour-time. The *Fragment* argues that these workers are uniquely in a position to appropriate their own surplus-labour at the moment of crisis. There is no suggestion that this appropriation comes about through their own initiative, through industrial organisation or through political mobilisation. The revolutionary crisis is rather presented as a matter of systemic logic, as the necessary and inevitable *telos*, the hubris, of fixed capital.

This is quite unlike Marx's discussion of the same issues a decade later, in Chapter XV of the first volume of *Capital*. Chapter XV, like the *Fragment*, deals with the shift from manufacturing production using hand tools and simple machines to factory-based industrial production using inter-connected machinery. But it deals with it at greater length, and in a very different manner. There is a difference, firstly, in terminology. We have already seen that by the time he came to work on *Capital* Marx had rejected the concept of fixed capital (1954, 572 [Footnote 3]), so it is no surprise to find that it is absent from Chapter XV, which refers instead, depending on context, to constant and variable capital (1954, 365; 383), "modern industry" (351; 458) "an organised system of machinery" (360), and so on.

Secondly, in the *Fragment* Marx discussed fixed capital in the abstract, without reference to any particular system of machinery or industrial sector, or any particular country or time-period; as if the character and destiny of fixed capital were simply given, regardless of context. In Chapter XV however, he dealt constantly in historical specifics and contingencies. He described the ways in which modernisation in one sector drives modernisation in other sectors (1954, 362-363). He stressed that different ratios of necessary-labour to surplus-labour in different countries and industries have different implications for the introduction of modern machinery (370-372). And he described how external events such as legislation or war may stimulate investment in new machinery (386-387; 408). Chapter XV is a detailed historical analysis of the introduction of modern machinery in certain named industries, mainly in England, up to the 1860s. Compared to it, the *Fragment* is a brief, abstract, ahistorical sketch.

Thirdly, insofar as workers appear in the *Fragment*, they are represented as subordinate to the logic of fixed capital. They are de-skilled and marginalised when fixed capital grows (Marx 1973, 705); and liberated when it implodes (1973, 708). But nowhere is there any sense of the working class as a continuous living presence, with its own experiences and practices. In Chapter XV, however, there is such a presence. Like the *Fragment* it discusses de-skilling and marginalisation, but in doing so it reveals distinctions within the working class to which the *Fragment* is blind. For instance, Chapter XV describes how the introduction of modern machinery in England changed the age- and gender-balance of the workforce by expelling skilled male workers, and bringing in women and children (1954, 372-379), and it discusses the consequences of this for working-class organisation (379) and family life (460). Marx looked forward in Chapter XV to a coming era of working-class power. But instead of posing this simply as the fulfilment of a logical necessity, he envisaged a political process, building upon and pushing beyond the limited achievements of the Factory Acts (458-459). And he argued that working class experience under capitalism was equipping it with new capacities in areas such as education (458).

This comparison between the *Fragment* and Chapter XV is of course unbalanced. The *Fragment* is a short passage never intended for publication, while Chapter XV is a long chapter in Marx's most important published work. But the comparison is nevertheless valid: firstly, because it confirms Marx's enduring interest in technological change and modern machinery, establishing that the *Fragment* was neither his only word, nor his last word, on this theme; and secondly, because Chapter XV gives us a point of reference which reveals the *Fragment* as a brief exercise in abstract speculation.

## 6. Explaining the Fragment

What, then, was Marx trying to achieve when he wrote the *Fragment* in February 1858? Why this abstract speculation on fixed capital, which ignored actually-existing machinery in specific industries; ignored the distinction between individual capitals and capital-in-general; and ignored exchange and realisation in its discussion of labour and value? The only way to answer such a question is to view the *Fragment* in its context.

In respect of its textual context within the *Grundrisse*, we have already seen that the *Fragment* follows a passage dealing with the relation between fixed and circulating capital. Its focus on fixed capital was therefore a continuation of an existing train of Marx's thought.

Secondly, and more significantly, the *Fragment* (and the *Grundrisse* as a whole), was written during the international economic crisis of 1857-8: the *Grundrisse* marked Marx's resumption of economic studies, prompted by the crisis. But he was also responding to it in other ways. Throughout 1857 and 1858 he was writing articles about the crisis for the *New York Daily Tribune*, and discussing it constantly in letters to friends and colleagues such as Engels and Lassalle. In these articles and letters Marx's view of the crisis was clear: he referred to it as a "commercial crisis" (Marx and Engels 1983, 197; 226) of trade, money and debt, which became increasingly 'political' as it provoked panic-stricken interventions by governments and banks (Marx and Engels 1986, 379-384). And he hoped and believed that it might provide the trigger for a revolutionary outbreak, above all in France with its national revolutionary tradition (1986, 453-8; 459-63; 472-6).

In February 1858 the crisis was still unresolved, and Marx was still optimistic about its revolutionary potential. In a letter to Engels on 22nd February, after his usual complaints about poor health and lack of money, he went on: "Fortunately, events in the outside world offer a good deal of solace just now [...] Taken all in all, the crisis has been burrowing away like the good old mole it is" (Marx and Engels 1983, 273-274).

And yet February 1858 was also when he wrote the *Fragment*, in which he sketched out a theory of crisis which bore no relation to his understanding of the real-world crisis through which he was living. In his articles he wrote of the collapse of trade, unsold goods, failing banks and factory lay-offs, while in the *Fragment* he wrote of a crisis of value arising solely from the internal contradictions of fixed capital. How to explain this paradox? How could Marx have been committed, simultaneously, to two such incompatible understandings of capitalist crisis?

In fact, the paradox only appears if we assume equal status, and equivalent intention, between his articles on one hand, and the *Fragment* on the other. Once we remove that assumption, the paradox dissolves. Marx's articles in the *New York Daily Tribune* represented views to which he committed himself publicly, whose starting point was a real-world event, an international crisis, which demanded analysis and explanation. The crisis was an undeniable fact; the challenge was to reveal its hidden causes and consequences.

The *Fragment*, on the other hand, was a private intellectual exercise undertaken as part of Marx's self-education in economic theory. By this point in his studies he was interrogating the concepts of fixed and circulating capital, which he still regarded as useful and robust theoretical categories. In the *Fragment* he homed in on fixed capital to conduct a thought-experiment. We may not associate Marx with thought-experiments, but this was a game he had played before. Elsewhere in the *Grundrisse* he worked through a 'what-if' exercise on non-capitalist accumulation: "Posit that no capitalists exist at all, but that the independent and mutually exchanging workers worked

more than necessary to live, because they want to accumulate too [...]” (Marx 1973, 573).

In the *Fragment*, the purpose of the thought-experiment was to explore fixed capital’s internal logic, and to push that logic to the limit of its compatibility with value-based production. This aim was pursued in terms broadly analogous to an experiment in natural science, in the sense that it deliberately ‘controlled’ or held at bay complicating factors, the better to focus upon the primary object of interest. In order to concentrate on the concept of fixed capital, Marx put aside factual or historical questions of industrial or technological development; put aside the distinction between individual capitals and capital-in-general; and put aside considerations of commodity exchange. And he framed his thoughts on labour and value in the light of this concentrated focus on fixed capital and concrete production.

The thought-experiment was, however, bound to fail, for two reasons. Firstly, the concept of fixed capital, upon which the whole exercise was predicated, is not a robust theoretical category. Instead it is, as Marx observed in *Capital*, an inadequate and “mere[ly] formal” conception (1954, 572, Footnote 3).

And secondly, a thought-experiment in social theory is an entirely different matter from a controlled experiment in natural science. The categories of social theory, and those of natural science, belong to different cognitive orders; and whereas an experiment in natural science should in principle be verifiable, or falsifiable, or both, a thought-experiment in social theory cannot be either. It is likely to generate not clarity, but rather a spurious and misleading simplicity – which is exactly what we see in the *Fragment*. Insofar as the *Fragment* was an experiment, it was therefore a failed experiment, and it is significant that Marx never sought to develop or elaborate its argument in his later writings. The implication is that, if he remembered or thought about it at all, he regarded it as a dead-end.

To conclude: what does this interpretation imply for the contemporary debate on cognitive capitalism? Put brutally, it implies that the *Fragment* has little to contribute to this debate. The *Fragment* is not a harbinger of a knowledge economy, and its reference to general intellect does not have the status or meaning sometimes attributed to it. And it is flawed more broadly in that it fails to make use of the rich conceptions of labour and value which characterise the main body of Marx’s work, and which are an essential starting point for a Marxist contribution to the debate on cognitive capitalism.

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