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Probabilism and determinism in political economy

The case of Bernstein and Engels

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I: Introduction

Eduard Bernstein's proposals for revising marxist theory burst like a thunderclap on the late 19th century workers' movement, and in particular on the German social democracy. Here was the militant who had suffered 20 years of exile, whose editorship of the party newspaper had made it such a powerful weapon, the acquaintance of Marx and the friend and literary executor of Engels, saying in terms that their scientific method was so fatally flawed that it should be fundamentally recast.

Not only that, but Marx's forecasts about the development of capitalism, made on the basis of this method, were not only untenable but had already been exposed by events. These forecasts, Bernstein was claiming, were not only wrong in detail, but their apparent conclusion—the inevitable breakdown of capitalism—was now clearly unsustainable.

Bernstein's position, first set out in a series of articles, and rejected at the party's Stuttgart conference in 1898, was given a unified expression in a book published the following year. This centenary, in an era when "capitalism has won", supposedly, is an appropriate moment to review Bernstein's claims. However, the object of this essay is not to refute Bernstein's empirical conclusions, which have been dealt with adequately by history, nor is it a revisiting of contemporary political debates about revisionism.

Rather, it is to examine the intellectual sources of his error, and in particular to examine Bernstein's views on the determinism which he maintained was a central feature of the historical materialist method. This is important, because—as I claimed in passing in a previous IWGVT paper (Wells 1997) but did not substantiate—there is a pervasive atmosphere of determinism in the thought of many marxists, which is, however, unjustified by anything to be found in the works of Marx and Engels.

The paper will first review Bernstein's critique of Marx and Engels, and suggest that his misunderstanding is not simply attributable to any personal scholarly shortcomings, but was a feature of marxist thought in general at that time; it will then show that Bernstein, despite his long and close association with Engels, simply failed to grasp even the obvious tendency of the latter's works; finally, these failures will be set against the wider intellectual background of ideas about probabilism and determinism in the 19th century.

What follows is the work of an English-speaking economist who is ignorant of German; the possible shortcomings of this for a philosophical study of authors who composed in German are evident.

II: Bernstein's critique of Marx and Engels

The Calvinist without God

Bernstein's systematic exposition of his views was published in 1899 as *Die Voraussetzungen des Socialismus*; an English translation by Edith C. Harvey was published in 1909 under the title *Evolutionary socialism*, and reprinted in 1961 and 1963. A new English translation by Henry Tudor has recently been published under the title *The preconditions of socialism*.[1] Since Harvey's translation is the statement best known to English-speaking readers it is unfortunate that it not only leaves out between a quarter and third of the original, but that these omissions include the whole of Chapter Two, 'Marxism and the Hegelian dialectic', in which Bernstein presents his philosophical critique, such as it is, of Marx and Engels. Tudor comments that "many inaccuracies and other defects crept in" to what Harvey did translate (1993: xi).

While leaving out philosophical considerations might be thought appropriate for an English-language audience, it is these which, according to Bernstein himself, constitute the scaffolding from which the marxist scientific edifice was constructed (1993: 199). Given the relative unfamiliarity of this part of Bernstein's thought, it will be quoted extensively below.

So what is Bernstein's notion of the materialist conception of history? In his own words:

"The question of the correctness of the materialist conception of history is a question of the degree of historical necessity. To be a materialist means first of all to assert the necessity of all events. According to the materialist theory, matter moves of necessity in accordance with certain laws; therefore there is no cause without its necessary effect and no event without a material cause. However, since the movement of matter determines the formation of ideas and the directions of the will, these too are necessitated, as are all human events. The materialist is

[1] In what follows all quotations from Bernstein's book are from the Tudor translation and are referenced as (Bernstein 1993); references to Tudor's introduction and critical apparatus are referenced as (Tudor 1993); the names are omitted where there appears to be no danger of ambiguity. Note that Tudor's translation is of the first edition (1899), not the revised and enlarged second edition (1921).

thus a Calvinist without God. If he does not believe in a predestination ordained by a divinity, he does and must believe that from any particular point in time all subsequent events are, through the totality of the given material and the power relations of its parts, determined beforehand.

"The application of materialism to the interpretation of history therefore means asserting, from the outset, the necessity of all historical events and developments. *For the materialist, the only question is in what way necessity manifests itself in human history*, what element of force or what factors of force speak the decisive word, what is the relationship of the various factors of force to one another, and what role in history falls to nature, the economy, legal institutions, and ideas." (1993: 13, emphasis added)

To repeat: "materialism … means … the necessity of all historical events and developments. … [including] the formation of ideas and the directions of the will … from any particular point in time all subsequent events are … determined beforehand."

This, of course, is the doctrine of Laplace; the claim that a sufficiently capacious mind, armed with knowledge of fundamental physical laws and a list of the positions and velocities of every particle in the universe at a given point in time, could predict every detail of the future and recapitulate every incident of the past. And as Bernstein's comments show, one must apparently either embrace some variety of idealism in order to leave room for human freedom, or be a consistent materialist and assert that all human events are thus equally pre-determined. This dilemma will be returned to below, where the latter doctrine will be referred to as hyper-determinism.

Bernstein supports his interpretation of historical materialism with a lengthy quotation from the *Contribution to the Critique of Political Economy*, beginning with the famous claim that "It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness", and claims that "'consciousness' and 'existence' are so sharply opposed that we are nearly driven to conclude that human beings are regarded as nothing but the living agents of historical forces whose work they carry out against their knowledge and will" (1993: 14). And he buttresses this with Marx's comment, in the preface to the first volume of *Capital*, that with respect to the "natural laws" of capitalist production "it is a question of these laws themselves, of these tendencies winning their way through and working themselves out with iron necessity"(1976: 91).

Retreating from economic determinism?

But, having stationed Marx in this exposed position, Bernstein himself then prudently conducts an apparent retreat under covering fire provided by Marx's stipulation (1976: 91) that the laws in question are ones of *tendency*, not of outcome. Bernstein also relies on Engels' remark that "[p]olitical, juridical, philosophical, religious, literary, artistic, etc., development is based upon economic development. But all these react upon one another and also upon the economic basis"; as Bernstein comments: "[o]ne must confess that this sounds somewhat different from the passage from Marx quoted above" (1993: 15). The consequence is that Engels is only claiming that "the *ultimate causes* of all social transformations … [lie] in transformations of the mode of production" (emphasis in Bernstein's quotation[2]), implying that there might be other, secondary, causes modifying or attenuating the ultimate ones: "the longer the series of such causes the more limited, both qualitatively and quantitatively, is the determining force of the ultimate causes".

Bernstein is at pains to claim *both* that Marx and Engels never "overlooked" the fact that "non-economic factors exercise an influence on the course of history" *and* that they softened their alleged reliance on the economic as the determining force as the years passed. This then licenses Bernstein to assert that, since "whoever employs the materialist conception of history nowadays is duty bound to use it in its most developed and not in its original form", therefore "he is duty bound to take full account of the legal and moral concepts, the historical and religious traditions of every epoch, geographical and other natural influences, which include the nature of man himself and his intellectual dispositions", especially if the object is not to explain history but to make predictions about the future (1993: 16).

Retreating from hyper-determinism?

In modern society, according to Bernstein, knowledge of economic "forces of nature" (1993: 19) transforms them from the masters of humanity to its servants, just as has happened with the physical ones. Only sectional interest prevents the complete transformation of this theoretical freedom into practice, but "even here the general interest gains increasing strength as against private interest". Thus:

" … the level of economic development reached today leaves ideological and especially ethical factors greater scope for independent activity than was formerly the case. In consequence, the *causal* connection between *technical*-economic development and the development of the other social institutions becomes increasingly a mediated one, and the *natural* necessities of the former become ever less decisive for the formation of the latter" (1993: 19-20, emphases added).

Now it is Bernstein who is in an exposed position, and he allows his intellectual big guns to retreat. Although "originally … an almost unlimited determining force was ascribed to the technical-economic factor in history" (1993: 21), in fact, according to Engels' explanations quoted above, marxist theory is not purely materialist, much less purely economic:

"Philosophical materialism, or the materialism of the natural sciences, is deterministic. The Marxist conception of history is not. It assigns to the economic basis of national life no unconditional determining influence on the forms which that life takes." (1993: 22)

All the above is from Bernstein's first chapter ('The basic tenets of Marxist socialism'). Harvey's translation jumps straight from this to Bernstein's original Chapter Three, 'The economic development of modern society', where he presents his evidence for the failure of Marx's predictions,

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[2] The first passage is from a letter to W. Borgius of 25.1.1894 (MESC, p.549, cited (1993: 15)); the second from the *Anti-Dühring* (MECW, vol. XV, p 254, cited (1993: 14)).

but as previously mentioned the omitted second chapter contains the philosophical groundwork with which Bernstein prepares the reader to understand the reasons for Marx's failures as soothsayer. This he does in two sections.

'The pitfalls of the Hegelian dialectic'

Bernstein accurately reports Engels as adopting Hegel's distinction between the metaphysical and the dialectical: the former treats things or their thought images in isolation as objects fixed and given for all time, while the latter "regards things in their connections, changes, and transitions, with the result that the two poles of an antagonism, like positive and negative, mutually penetrate into one another". But as Bernstein points out, while Hegel conceives dialectic as the self-development of the concept, with Marx and Engels the dialectic of the concept becomes the conscious reflection of the dialectical movement of the real world (1993: 30). However, Bernstein claims:

" … placing the dialectic on its feet is not as simple as that. However things may stand in reality, as soon as we leave the solid ground of *empirically verifiable facts* we enter the world of derived concepts, and if we then follow the laws of dialectics, as laid down by Hegel, we will, before we know it, find ourselves once again enmeshed in 'the self development of concepts'. Herein lies the great danger of the Hegelian logic of contradiction. … as soon as developments are deductively anticipated on the basis of these changes, the danger of arbitrary construction begins." (1993: 30-31, emphasis added)

In the real life of the individual, and in history, however, "development through antagonism is accomplished neither as easily and radically nor with the same precision and symmetry as it is in speculative construction"[3] and, Bernstein adds: "Any Marxist nowadays would agree with this as regards the past; but for the future, even for the very near future, Marxist theory holds that this does not apply."

As an example of how a surfeit of dialectic can lead one astray, Bernstein cites Marx and Engels' prediction in the *Communist Manifesto* that the pending bourgeois revolution in Germany would be the prelude to an immediately following proletarian one and contrasts it with Engels' later admission in the preface to *The Class Struggles in France* that he and Marx had under-estimated the time-scale of social and political development (Bernstein 1993: 35).

Self-deception of the kind shown in the *Manifesto*, according to Bernstein, is only comprehensible in someone like Marx if it were not seen as a remnant of Hegelian dialectics. The notion that Hegelianism in Marx and Engels' thought was an infantile disorder which they never quite grew out of is reinforced by citing the rebuff given by Engels to the so-called 'Youngsters' in the SDP who clashed with reformist elements in the Party over observing May Day. Whereas Engels had criticised the reformists over their support for so-called steamship subventions (state ship-building subsidies to bolster colonial expansion), over May Day he condemned their opponents' "literary and student revolt" as being inspired by "convulsive and distorted Marxism". Bernstein comments:

" … this ambivalence, so utterly out of character for Engels, was ultimately rooted in the dialectic taken over from Hegel. Its 'yes, no and no, yes' instead of 'yes, yes and no, no', its antagonisms flowing into one another, its transformation of quantity into quality, and all other such dialectical delights, time and again got in the way of a proper assessment of the significance of observed changes." (1993:34)

'Marxism and Blanquism'

Bernstein notes that Hegelian philosophy can be described as the ideological counterpart of the French Revolution, in which "man took his stand on his head, that is, on thought".[4] The most radical tendency in that revolution had been that of Babeuf, whose spiritual heir in the events of 1848 was Auguste Blanqui. But although in Germany Blanquism was regarded as simply the theory of insurrectionary conspiracy, according to Bernstein, that view "stops short at externals and applies, at most, to certain epigones of Blanqui". Political methods are "partly" a matter of circumstances; "where there is no freedom of association and of the press, secret leagues are obviously appropriate". (1993: 38)

Blanquism is more like the theory of a method, which is itself merely the outcome of a deeper underlying political theory—which is "quite simply the theory of the immeasurable creative power of revolutionary political force and its manifestation, revolutionary expropriation." To reject putsches does not amount to liberating oneself to Blanquism.

Marx and Engels' writings of the period illustrate this perfectly; although they reject putsches, "they are permeated throughout with what is, in the last analysis, a Blanquist or Babouvist spirit". The only socialist literature that escapes criticism in *The Communist Manifesto* are the writings of Babeuf, and the programme of revolutionary action set out there is Blanquist through and through (1993: 38-9).

However, the worst outbreak of Blanquism in Marx and Engels' work is in "the circular to the Communist League of March 1850 with its exact instructions as to how the communists, in the imminent re-eruption of the Revolution, must draw on every possible resource to make this revolution 'permanent'. All theoretical insight into the nature of the modern economy … all *economic* understanding vanishes to nothing before a programme so illusory it could have been set up by any run-of-the-mill revolutionary" (emphasis added). Marx and Engels made mere will into the driving force of the revolution, according to Bernstein.

This might be excused as simply the kind of over-reaction which is apt to grip people in exile, but although such considerations might explain exaggerations in presentation, "it can not explain that glaring opposition between programme and reality" (1993:40) This was in

[3] Bernstein is quoting from F.A. Lange, *The Labour Question*, 3rd edn. pp 248-9 (cited 1993: 31).

[4] Bernstein is quoting from Hegel's *The Philosophy of History*; the translation is due to Tudor (1993: 37, footnote).

fact the product of "an intellectual defect, of a dualism in their theory".

Bernstein claims that there are two main streams in "the modern socialist movement"; one which "starts from the proposals for reform worked out by socialist thinkers" and is aimed at construction, and one which "derives its inspiration from popular revolutionary upheavals" aimed at destruction. According to the possibilities inherent in the conditions of the time, he says, the first appears as "utopian, sectarian, peacefully evolutionary", the second as "conspiratorial, demagogic, terroristic". (1993: 40)

Historical development shows more and more clearly that the first seeks the emancipation of the workers through economic organisation, whereas the second seeks emancipation through political expropriation of the ruling class. And Marxism is an uneasy compromise between the two, which accounts for the fact that it "repeatedly and at frequent intervals appears in a different guise. These are not differences … produced as changing circumstances require changing tactics: they … appear spontaneously without any compelling external necessity, merely as the product of inner contradictions." (1993: 41)

Not only this, but "[e]very time we see the doctrine which proceeds from the economy as the basis of historical development capitulate before the theory which stretches the cult of force to its limits, we find a Hegelian principle. … The great illusion of Hegelian dialectic is that it is never entirely in the wrong. … Is it a contradiction to put force in the place so recently occupied by the economy? Oh no it isn't, because force is itself 'an economic power'!"

III: Critique of Bernstein

Falsification of the 'falsifications'

It is a methodological error to scrap potentially fruitful theories purely because of apparent early falsification of their predictions; but when theories are falsified as rapidly, spectacularly and as consistently as were Bernstein's one cannot avoid the conclusion that their foundations are shaky.

The German state, where universal suffrage was the terror of the junkers (1993: 144) and would thus lead to the gradual abolition of class rule (142), launched an imperialist world war just 15 years later[5]; the cartels, whose development was supposed to hold back capitalism's inbuilt tendency to crisis (84), hindered neither hyper-inflation nor depression; the middle classes—which instead of withering away (60-1) were to be conciliated (147) and won over to social democracy (158)—saw their savings wiped out and backed Hitler.[6]

What are the sources of Bernstein's errors?

First of all, it has to be said that Bernstein is less than happy in his use of his material. For example, in arguing that industry shows no tendency to increasing concentration Bernstein says that "for a long time, in the canton of Zurich, domestic weaving … declined" (1993: 69). Later, however, between 1891 and 1897 domestic weavers increased from 24,708 to 27,800, while employment in mechanised mills increased "only from 11,840 to 14,550". As a moment's calculation shows, the domestic sector increased by 12.5 per cent, while the mechanised one grew by "only" 22.9 per cent.[7]

[5] At the close of which Bernstein participated in the SDP government which presided over the repression of the German revolution. In *The preconditions* he had written that "[p]articularly in Germany, on the day after a revolution anything but a purely Social Democratic government would be an impossibility. A…compromise government composed of bourgeois democrats and socialists would, for all practical purposes, mean either that a couple of the former were included as decoration in a socialist government or that social democracy had surrendered to bourgeois democracy. At a time of revolution, this surely a most improbable combination." (1993: 45)

[6] Bernstein said that he regarded "the bourgeoisie, including the German, as being, on the whole, in a fairly healthy state, not only economically but also morally." (1993: 147, footnote).

A pathetic note is struck by his last extant letter (to Kautsky, 23 January 1932): "[T]he great economic depression has created a general world crisis, our enemies may…make common cause at the decisive moment". (Gay 1952: 297)

[7] This is not an isolated example. Bernstein also appeals to the following data (Table 1) on the structure of employment in German industry to illustrate his claims about the (non-) concentration of industry (1993: 71).

	1882	1895	% increase
Small (1-5)	2,457,950	3,056,318	24.3
Small/medium (6-10)	500,097	833,409	66.6
Larger/medium (11-50)	891,623	1,620,848	81.8
Total, small and medium firms	3,849,670	5,510,575	
Big (>50)	not stated	not stated	88.7

Table 1: Number of employees in German companies

Although Bernstein admits that this shows employment in large industry increasing faster than in small, he alleges that because the total population increased by only 13.5 per cent the faster growth of large-scale industry did not mean the absorption of smaller companies. Actually what this fact implies is that a larger proportion of the population was swept into industry, which in turn shows in a curious light Bernstein's efforts to demonstrate that the peasantry is flourishing (1993: 73ff).

If one considers the shares in industrial employment in smaller firms claimed by the three sectors, of course, very small industry is evidently declining relative to medium-sized significance (Table 2).

	1882	1895	% change
Small (1-5)	63.8	55.5	-8.3
Small/medium (6-10)	13.0	15.1	+2.1
Larger/medium (11-50)	23.2	29.4	+6.2

Table 2: Employment in small and medium companies as percentage of total for sector

To support his various contentions Bernstein brings forward a mass of quantitative evidence. Much of it is omitted from the Harvey translation, including the Swiss example given in the main text, but not the German employment data just cited,

Rather more spectacular than this incompetence with percentages is what he clearly regards as the clincher to his claims about the non-concentration of capitalist industry, namely the failure of this tendency in 'England'.[8]

Since this country is admitted by all to be "the most advanced in terms of capitalist development", its failure to fulfil Marx's predictions would clearly be telling evidence against their validity, and Bernstein produces various statistics to indicate that "[t]he 'workshop of the world' is … still far from having fallen prey to large-scale industry to anything like the degree that is often supposed. … no major class is disappearing from the scale" (1993: 66-7).

And, in a footnote, Bernstein adds that this evidence of non-concentration in Britain is lent added credence by the testimony of German workers who, on emigrating to Britain, are astonished—at its *backwardness* in this respect compared with Germany![9]

"Begging the question" is not a rare error in argumentation: but there cannot be very many cases of authors smuggling the *negation* of their desired conclusion into their premises.

For someone who rejects dialectics for something more cut-and-dried—"yes, yes and no, no"[10]—Bernstein's grasp of traditional logic is not impressive. Indeed, the whole basis of his argument against Marx and Engels is a logical muddle.

Bernstein fails to notice that his arguments against economic determinism are not arguments against determinism, but merely against its having an exclusively economic aspect. Nor does he notice that if hyper-determinism is true, insisting on economic determinism is either:

(i) **false**, if the hand of fate rules our history *only* through the physical events which we experience as ideas about law, ethics, religion, and so on

(ii) **arbitrary**, if fate also rules through our interaction with the means of production or through the events which we experience as ideas about markets or other economic relationships

(iii) **redundant**, if fate *only* rules by economic routes.

By similar reasoning, emphasising any other route (legal, ethical, *etc*.) for determinism is also false, arbitrary or redundant, just in case hyper-determinism is true (there is, of course, a more fundamental redundancy involved in discussing these issues if hyper-determinism is true, but for obvious reasons this is not worth pursuing).

Moreover, although Bernstein makes a number of statements which are in conflict with hyper-determinism, he never presents any argument against it as such.

This is because Bernstein himself was fatally ambivalent on the question of determinism in general.

Arguing against Blanquism

Although he claims to be against (exclusively) economic determinism, and claims that with the further development of society mankind will be able to take a conscious decision to repeal the economic laws of capitalism in favour of socialism, Bernstein's own case in fact relies on at least some fairly strong version of economic determinism to be coherent.

How is this? Recall that while (at any rate, the early) Marx and Engels are at first accused of excessive ("technico-") economic determinism and of failing to take account of legal and ethical factors, a few pages later their crime has become that of revolutionary over-enthusiasm, in the form of claiming that force is itself an economic power.

Since Bernstein cannot, without inconsistency, claim that the Blanquist error lies in supposing that acts of will *as such* are impotent, he clearly needs an argument to show that whatever their future potency, their time has not yet come.

What is this argument? Essentially that:

(i) capitalism will not force such a choice on society (because of the failure and unfoundedness of Marx's various predictions (capitalist crisis, immiseration, etc.)

(ii) the capitalist system has not yet developed the economy and society sufficiently for the wilful transition to socialism to be feasible in the foreseeable future.

In short, Bernstein's revisionist theory is just as economically deterministic as he claims Marx and Engels' to be; the only differences are the time-scale (by implication) and the nature of the choice that will eventually face humanity (and hence the nature of its decision).

Rosa Luxemburg, in her response to Bernstein's book, pointed out that any new movement "begins by suiting itself to the forms already at hand, and by speaking the

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nor the comparison of British and German industry dealt with below. It might be an instructive, if tedious, exercise to go through it all in a similar manner as done here.

[8] Despite years living there, he is unaware of any distinction between the British state and its constituent territories.

[9] "[They] have repeatedly expressed their astonishment to me at the fragmentation of businesses they have encountered in the wood, metal, *etc.*, manufacturing industries" (1993: 67). And on the next page Bernstein writes that "In Prussia and in the rest of Germany, the creation of large-scale industry has been accomplished with extraordinary speed. While various branches of large-scale industry (including the textile industry) still lag behind England, others (machines and tools) have on average reached the English position, and some have overtaken it (the chemical and glass industries, certain branches of the printing trade, and probably also electrical engineering)."

[10] When it suits him, however, Bernstein is not averse to amputating the first and last words quoted here.

Summing up his version of Marx's predictions ("fall in the rate of profit…overproduction and crises…destruction of capital…concentration…of capital…increase in the rate of surplus value"), Bernstein asks: is all this correct? To which the answer is: "*Yes and no*.…The forces…exist, and they operate in the given direction.…If the picture does not agree with reality, then it is not because anything false has been said but because what is said is incomplete. Factors which have a limiting effect…are…though dealt with here and there…abandoned when the established facts are summed up and compared" (1993: 57, emphasis added).

In other words Bernstein does not dare contradict the master directly but is prepared to mutter under his breath. Once again we may note Bernstein's positivist, not to say positively Machian, belief that science is just a matter of collecting up "empirically-verifiable facts" and comparing them.

language which was spoken" (*Selected Political Writings*, p.134, cited by Tudor, 1993: xxxi).

With this insight, recall that Bernstein, as we have seen, begins his account of historical materialism with the claim that the materialist "does and must believe that from any particular point in time all subsequent events are … determined beforehand".

As noted above, this hyper-determinism is the doctrine of Laplace. It is worth giving Laplace's version in full:

"All events, even those which on account of their insignificance do not seem to follow the great laws of nature, are a result of it just as necessarily as the revolutions of the sun. … Given for one instant an intelligence which could comprehend all the forces by which nature is animated and the respective situation of the beings who compose it—an intelligence sufficiently vast to submit these data to analysis—it would embrace in the same formula the movements of the greatest bodies of the universe and those of the lightest atom; for it, nothing would be uncertain and the future, as the past, would be present to its eyes." (*Philosophical Essay on Probabilities*, pp 3-4, cited Hacking (1990: 11))

Is this "the language that was spoken" on the subject of necessity? Apparently it was, since according to Kolakowski (1978, Vol. II: 111) Bernstein's philosophical critique (which Kolakowski describes as "trite and lacking in understanding"[11]) played a very small part in the polemics against him, with the exception of Plekhanov (1978: Vol. II, 348).

Consider the content of Luxemburg's own reply to Bernstein. Effectively she accepts his characterisation of historical materialism as determinism with her claim that Bernstein's "idealism" is the result of denying that capitalism leads to inevitable collapse. By idealism she means that denying the "objective necessity" of socialism – which constitutes its scientific character – leaves it as merely a rational possibility which can be made a matter of moral commitment; thus Bernstein offered "an idealist explanation of socialism" (SPW pp. 58 and 59, cited Tudor 1993: xxxii and xxxiii).

Tudor argues that while Bernstein was simply denying that the desirability of socialism could be established scientifically, Luxemburg thought that the defects of capitalism had to be demonstrated by capitalism itself, and that it had to do this by demonstrating its inability to carry on.

In *The Accumulation of Capital* Luxemburg writes that the ultimate aim of the accumulation process is "to establish the exclusive and universal domination of capitalist production in all countries and for all branches of industry.

"Yet this argument does not lead anywhere. As soon as this final result is achieved—in theory, of course, because it can never actually happen—accumulation must come to a stop. The realisation and capitalisation of surplus value become impossible to accomplish. Just as soon as reality begins to correspond to Marx's diagram of enlarged reproduction, the end of accumulation is in sight, it has reached its limits, and capitalist production is *in extremis*. For capital, the standstill of accumulation means that the development of the productive forces is arrested, and the collapse of capitalism follows inevitably, as an objective historical necessity." ([1913] 1951: 417)

Thus capitalism is "the first mode of economy which is unable to exist by itself" and "[a]lthough it strives to become universal, and indeed, on account of this tendency, it must break down—because it is immanently incapable of becoming a universal form of production." (1951: 467)

What Luxemburg wants to prove by this is quite clear: that social development is governed by inevitable laws of economics which predict the automatic breakdown of capitalism, just as Bernstein claims is entailed by historical materialism[12]. Moreover it is noteworthy that this is an entirely different breakdown theory to that attacked by Bernstein, which relies on bigger and better busts in the trade cycle, and which Luxemburg dismisses:

"[I]n spite of the sharp rises and falls in the course of a cycle, in spite of crises, the needs of society are always satisfied more or less, reproduction continues on its complicated course, and productive capacities develop progressively. … The attempt to solve the problem of reproduction in terms of the periodical character of crises is fundamentally a device of vulgar economics, just like the attempt to solve the problem of value in terms of fluctuations in demand and supply." ([1913] 1951: 36)

Kolakowski's survey (all references are to 1978 Vol. II) also suggests that Kautsky (35), Lafargue (144), Labriola (180), Adler (272), Plekhanov (338), and Lenin (454) among others were all committed to some version of determinism – in Lafargue's case to the extreme version implied by Bernstein's account; namely, that since all human behaviour is subject to determinism, free will is a delusion.

The only exception he finds is the obscure Stanislaw Brzozowski (219), who explicitly combated determinism and held that "[t]here was not a single concept, vision or method which, in the transfer from Marx's mind to Engels', did not become completely different, and indeed diametrically opposite as far as the philosophical nature of concepts is concerned" (cited 224).

Turning from intellectual history to practical politics, we may note the testimony of Bertrand Russell. In a series

[11] Kolakowski's prejudices make his evaluations unreliable, even as a negative guide. His overall approach to marxism is the same as Bernstein's – he wishes to preserve and commend Marx's intellectual contributions in special subjects (philosophy for Kolakowski, sociology for Bernstein), while deprecating the inferences drawn from them by practical revolutionaries.

Since Kolakowski had the dubious advantage of being a professional academic in a country controlled by Stalinists his prejudices take a predictable form: the nearer to power a particular thinker, the less reliable is Kolakowski's account.

[12] It is irrelevant that Luxemburg's argument, even granted her eccentric premises about the extra-capitalist source of surplus value, is incoherent: if capitalism relies on a non-capitalist sphere for its existence, but its unwitting efforts to destroy itself by becoming universal "can never actually happen", it is unclear how or why the predicted breakdown is to take place.

of six Fabian lectures[13] in 1896 Russell offered an account of the past history and present activities of the SPD, the latter clearly informed by first-hand observation in Germany. Russell's discussion of Marx is so slight as to be laughable[14] but his account of German social democracy in action is a lively and—where he is giving eye-witness testimony—convincing one (see for example pages 119 and 125). As an invincible pragmatist, Russell is able to spot what it took others several more years of bitter experience to realise: that the party was already largely reformist in substance if not in form. This is Russell's account of the cast of mind produced in party members by their conception of marxist doctrine:

"Marx's doctrine is thus in a theoretical sense revolutionary, to a degree never attained by any former theory of the world. But *practically*, *the revolutionary tendency is neutralised and held in check by* the other quality of development, also due to the dialectic method, *the quality of inherent necessity and fatality*. All change is due to an immanent principle in the actual order of things; in Hegelian phrase this order contains contradictions, which lead to its final ruin by a new order, in turn to suffer a similar disruption and euthanasia. Nothing, therefore, can hinder the predetermined march of events; the present logically involves the future, and produces it from its own inherent unrest. *This fatalism*, more than all else, gives to social democracy its *religious* faith and power; this inspires patience, and *controls the natural inclination to forcible revolution*. There is an almost oriental tinge in the belief, shared by all orthodox Marxians, that capitalist society is doomed, and the advent of the communist state foreordained necessity. As a fighting force, as an appeal to men's whole emotional nature, Social Democracy gains inestimable strength from this belief, which keeps it sober and wise through all difficulties, and inspires its workers with unshakeable confidence in the ultimate victory of their cause." (1986: 6, emphases added)

Thus it seems that Bernstein very largely *was* "speaking the language that was spoken", and in more than one respect.

However, it is the contention of this paper that (i) what Bernstein and virtually all the other participants had in common was that they failed to realise that what they were speaking was *not* the language of Marx and Engels. Hence (ii) what Bernstein attempted to revise was not marxism, and (iii) what he ended up with was not a revision of the notions he appeared to attack.

[13] Bernstein apparently discovered the shortcomings of Marx and Engels while giving a Fabian lecture in 1897 (Tudor 1993: xix). His topic was the always-rash one, "What Marx really taught".

[14] He sums up *Capital* as "tedious economico-Hegelian pedantry" (1896: 10), and opines that "the two later volumes add little to Marx's system" (1896: 15, footnote); the 25 pages he devotes to expounding Marx bear a striking resemblance in their concerns to Bernstein's critique, although much more philistine in expression.

Also like Bernstein (who, incidentally, doesn't get a single mention, in spite of his years of heroic exile), Russell's aversion to dialectics goads him into incoherence: "the average, by definition, lies half-way between the best and the worst" (1896: 19, footnote). This seems to be neither the mean nor the median.

IV: 'Calvinism without God'?

Fit for the boldest bourgeois

Bernstein claims that the materialist is necessarily "a Calvinist without God", in that this viewpoint requires hyper-determinism. In a footnote, Tudor comments that "[t]his reads like an unacknowledged quotation from Engels" but that he cannot find the source. (1993: 13)

If such a quotation were to be found which turned out to support the sense of Bernstein's argument it would be interestingly extraordinary, since the best-known texts make it clear that Engels had nothing but contempt for hyper-determinism philosophically:

"[D]eterminism … has passed from French materialism into natural science, and … tries to dispose of chance by denying it altogether. According to this conception only simple, direct necessity prevails in nature. That a particular pea-pod contains five peas and not four or six … that this year a particular clover flower was fertilised … by precisely one particular bee and at a particular time … have been produced by … an unshatterable necessity of such a nature indeed that the gaseous sphere, from which the solar system was derived, was already so constituted that these events had to happen thus and not otherwise. With this kind of necessity we … do not get away from the theological conception of nature. Whether with Augustine and Calvin we call it the eternal decree of God, or Kismet as the Turks do, or whether we call it necessity, is all pretty much the same for science. There is no question of tracing the chain of causation in any of these cases; so we are just as wise in one as in another, the so-called necessity remains an empty phrase, and with it—chance also remains what it was before." (1940: 231-2)

This excerpt from the *Dialectics of Nature* not only shows Engels' rejection of hyper-determinism, but also shows him clearly associating it with Calvin. Now it might be objected that *Dialectics of Nature* was not published until 1927—but of course Bernstein as Engels' literary executor had the manuscript in his possession[15] at the time when he was revising marxism (1896-9). Further, Bernstein had the advantage, which others did not, of being able to converse with Engels personally and frequently, and so might reasonably be expected to know what the latter's views really were.

In any case, it is incomprehensible why Bernstein might have thought that being embraced by a religious leader

[15] He did not get round to getting it refereed till 1924, when he sent it, or part of it, to Einstein. It seems that Einstein saw only the chapter on electricity, causing him to say that it was not of great interest to modern physics, but should on the whole be published (J.B.S. Haldane's Preface to *Dialectics of Nature*; 1940: xiv).

such as Calvin was a quality likely to adorn a doctrine serving the cause of proletarian revolution, especially given that Engels regarded it as the ideal doctrine for a rising *bourgeois* class:

"Calvin's creed was one fit for the boldest of the bourgeoisie of his time. His predestination doctrine was the religious expression of the fact that in the commercial world success or failure does not depend upon a man's activity or cleverness, but on circumstances uncontrollable by him. It is not of him that willeth or of him that runneth, but of the mercy of unknown economic powers; and this was especially true at a period of economic revolution, when all old commercial routes and centres were replaced by new ones, when India and America were opened to the world, and when even the most sacred economic articles of faith—the value of gold and silver—began to totter and break down." (1976: 437)

There is no question of *this* being unknown to Bernstein—for he himself quotes this passage in his *Cromwell and communism* (1980: 28-9).[16] On the other hand we may concede that an inattentive reading of this passage might see it as support for economic determinism—but note that Engels is merely discussing the problems of life in "the commercial world", not the metaphysical status of the economic with respect to a science of history: we shall see in a moment the significance of Engels' reference to "*unknown* economic powers".

Engels' arguments above show that he is against necessity, at least in the form of hyper-determinism. They do not show exactly what it is he is *for*. His complaint about "degrading necessity to the production of chance" could be simply about the slipshod and complacent outlook that proclaims universal determinism but is

(i) too dogmatic to acknowledge that in considering particular systems some aspects of their determination may be just irrelevant, and

(ii) too idle to produce the goods when called for.

In other words, this passage could be read as a demand for a more rigorous fulfilment of the hyper-determinist programme, with causal chains supplied for every event (or at least every class of event).

More unsympathetically, it could be read as equivocation—willing to pour scorn on an uncongenial outlook that is vulnerable to criticism, unwilling to admit that that same outlook is apparently required by a consistent materialism such as Engels proclaims—in which case one might sympathise with Bernstein's association of historical materialism with predestination, especially given Engels' notorious comment about freedom being the recognition of necessity.

However, this remark, examined in its context, is clearly no more than the point that ignorance of natural laws leaves us at their mercy whereas knowledge of them makes us their master, in the sense that we can—for example—exploit the law of gravity by building a hot air balloon ("Freedom does not consist in an imaginary freedom from natural laws, but in the knowledge of these laws and in the possibility which is thus given of systematically making them work towards definite ends." (1976: 144)).

Even more importantly, we are told that Bernstein was converted first to socialism by reading Dühring's masterpiece, and then to marxism by reading the *Anti-Dühring* (Gay 1952: 24-26).[17] If so, Bernstein's errors are even less excusable, for the passage in question is explicitly for the purpose of criticising *Dühring's* attack on "silly delusions of inner freedom":

"All false theories of freedom must be replaced by what we know from experience is the nature of the relations between rational judgement on the one hand and instinctive impulses on the other, a relation which *so to speak* unites them into a single mean force." (Cited by Engels: 143, emphasis in Engels)

To which Engels replies:

"On this basis freedom consists in rational judgement pulling a man to the left while irrational impulses pull him to the left, and in this parallelogram of forces the actual movement follows the direction of the diagonal. Freedom would therefore be the mean between judgement and impulse, between reason and unreason, and its degree in each individual case could be determined on the basis of experience by a 'personal equation', to use an astronomical expression."[18]

Engels then cites Dühring's alternative theory of freedom ("freedom … means nothing more to us than susceptibility to conscious motives in accordance with our natural and acquired intelligence. All such motives operate with the inevitability of natural law, … but it is precisely on this unavoidable compulsion that we rely when we apply the moral levers") to which the passage about freedom being the recognition of necessity cited above is a reply.

Not "freedom from natural laws, but … knowledge of these laws and … making them work towards definite ends" in Engels' words. How does this differ from Bernstein's conception of the possibility of ending or evading economic determinism thorough knowledge of economic laws? Evidently the point is simply plagiarised from Engels, who is then implicitly accused (through the business about Calvin) of asserting exactly the opposite!

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[16] Bernstein cites it as from an article on 'Historical materialism', *Neue Zeit* 1892-3, vol. i, pp 43-4. Exactly the same passage occurs in Engels' introduction to the English edition of *Socialism: utopian and scientific*, the popular pamphlet formed from three chapters of the *Anti-Dühring* (reproduced as an appendix in the 1976 edition of the *Anti-Dühring* referred to in this paper: the quotation appears on pages 437-8). This pamphlet was originally produced at the request of Lafargue (Engels 1976: 425), whom we have met above. Apparently he too either did not listen to, did not take notice of, or did not understand what was said to him.

[17] See also Gay 1952: 94-103 for a detailed account of this episode. It appears that Bernstein's one and only personal encounter with Dühring played a rôle in the cure.

[18] "Personal equations" are statistical statements used to describe the pattern of variation in each astronomer's observations, introduced by (and summing up) the individual's particular shortcomings in steadiness of eye and hand. The remark is interesting in demonstrating Engels' familiarity with at least one probabilistic model.

Even worse is Bernstein's accusation that Marx and Engels claimed that "force is an economic power". Here is what Engels actually has to say on the topic—again, from the *Anti-Dühring*:

"The rôle played in history by force as contrasted with economic development is … clear. … Either it works in the sense and in the direction of normal economic development. In this case no conflict arises between them, and economic development is accelerated. Or it works against economic development, in which case, with but few exceptions, force succumbs to it. … where … the internal state power of a country becomes antagonistic to its economic development, as occurred at a certain stage with almost every political power in the past, the contest always ended with the downfall of the political power. Inexorably and without exception economic development has forced its way through." (1976: 234-5)

Of course, Engels is here considering the use of state power to hold back society, not to push it on; one could still consistently assert the effectiveness of revolutionary political force (although this is hardly the sort of consideration to appeal to Bernstein).

Nonetheless one cannot assert that Engels unequivocally maintained that "force is an economic power" (as he says that it is impotent as a force for reaction). Indeed Bernstein might well have used this passage to support his early contention that Marx and Engels laid excessive weight on economic determination—"inexorably and without exception economic development has forced its way through"—but then, of course, it would make them appear to support his views about the inevitability of gradualism, and Bernstein would appear less innovative.

So it seems clear that Engels *is* against necessity in the hyper-determinist sense: it is still not really clear what he is *for*. In other words, what does he mean by chance? However, one does sense that he understands both the problem of free will for consistent materialism—namely show at least how it is consistent with known physical laws—and the implications of this problem in an era when all known physical laws implied strict determinism.

In the *Dialectics of Nature* there are some enigmatic remarks on Hegel's view of the relation between chance and necessity:

"In contrast to both conceptions, [of necessity and chance] Hegel came forward with the hitherto quite unheard of propositions that the accidental has a cause because it is accidental, and just as much also has no cause because it is accidental, that necessity determines itself as chance, and, on the other hand, this chance is rather absolute necessity." (1940: 233; Engels cites Hegel's *Logic*, II, Book III, 2: Reality)

Engels thus condemns both those who regard a thing as "either accidental *or* necessary, but not both at once" and "the hardly less thoughtless mechanical determinism which by a phrase denies chance in general only to recognise it in practice in each particular case." (1940: 234)

However, living before the era of quantum physics, Engels was clearly unhappy with the idea that some events might be *only* accidental: the outcome of pure randomness, and its consequence that even extremely unlikely events are not *logically* forbidden by the relevant physical laws.[19] While "[c]hance overthrows necessity, as conceived hitherto" the attempt to maintain Laplacean determinism "means to deny thereby all inner necessity in living nature, it means generally to proclaim the chaotic kingdom of chance to be the *sole* law of living nature." (1940: 234, emphasis added). *This* notion of chance harks back to older conceptions which will be returned to below.

What Bernstein might have made of this, had he read it or discussed it with Engels, one can only guess. But his antipathy to dialectics must suggest that if he was aware of this part of Engels' thought he was either simply mystified by it, or suspected that it was just metaphysical fudge.[20]

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[19] Nor was Engels' annotator Haldane: "Science is now beginning to tackle these questions in connection with quantum mechanics, and will doubtless find a way of expressing them less paradoxically than Hegel's. Meanwhile there seems to be little doubt that many of the laws of ordinary physics are statistical consequences of chance events in atoms. But these chance events are necessary, because, though we cannot predict what a given atom will do, we can predict how many out of a large number will go through a given process." (footnote, 1940: 233).

In fact, all we can say is approximately what proportion of a large number will go through a given process in a given time interval, on a large number of the occasions on which we check. If an ice-cube forms spontaneously in one's bath water, all one can say is that one has witnessed an extremely unlikely event. What might, with some intellectual juggling, be claimed to be necessary are the macro-level laws derivable from the micro-level ones—see for example Watkins (1984: 225-246) Chapter Six, 'Deductivism and statistical explanation'.

Oddly, Haldane—who normally bends over backwards to applaud Engels' discoveries of dialectical principles in nature—passes up the chance to claim that the practical certainty of macro-level laws in the face of micro-level indeterminacy represents an example of the transformation of quantity into quality.

[20] The difference between Bernstein's conception of necessity and that of real historical materialism (as opposed to Bernstein's caricature of it) is aptly summed up by a passage from Lenin:

"The objectivist speaks of the necessity of a given historical process; the materialist gives an exact picture of the given social-economic formation and of the antagonistic relations to which it gives rise. When demonstrating the necessity of a given series of facts, the objectivist always runs the risk of becoming an apologist for these facts: the materialist discloses the class contradictions and in doing so defines his standpoint. The objectivist speaks of 'insurmountable historical tendencies'; the materialist speaks of the class which 'directs' the given economic system, giving rise to such and such forces of counteraction by other classes. Thus, on the one hand, the materialist is more consistent than the objectivist, and gives profounder and fuller effect to his objectivism. He does not limit himself to speaking of the necessity of a process, but ascertains exactly what social-economic formation gives the process its content, exactly what class determines this necessity….On the other hand, materialism includes partisanship, so to speak, and enjoins the direct and open adoption of the standpoint of a definite social group in any assessment of events."

'The economic content of Narodism (*etc.*)', *Collected Works*, I (Moscow 1963), pp 400f; cited by Suchting (1979: 34).

Yet the key is in his hand—among the passages from Engels which he cites (1993: 15) to show that Marx and Engels' economic determinism was decidedly qualified, is one to the following effect: legal forms, political or religious ideas affect historical conflicts and may even "*predominate* in determining their *form* … Thus there are … innumerable intersecting forces, an infinite series of parallelograms of fore which give rise to one result—the historical event. … For what each individual wills is obstructed by everyone else, and what emerges is something that no one willed." (emphases in Bernstein[21])

[21] Letter to J. Bloch, 21-22.9.1890; MESC, p.499 (Tudor 1993: 15). Bernstein cites this from *Sozialistischen Akademiker*, October 1895.

"What each individual wills is obstructed by everyone else, and what emerges is something that no one willed." A clearer statement of how it is that social processes acquire the appearance of natural law, even though they may be the product of indefinitely many acts of individual free will, one hardly hopes to meet.[22]

[22] A vulgarised version of this, of course, is the stock-in-trade of Austrian economics.

V: The intellectual background to determinism and probability

Pre-19th century: chance and the mob

Before the early years of the 19th century, the notion of chance had the stigma of mobbish superstition; Hacking (1990) cites Hume ("'tis commonly allowed by philosophers that what the vulgar call chance is nothing but a secret and conceal'd cause"), Kant (it is "necessary that everything that happens should be inexorably determined by natural laws") and de Moivre, who we will examine in a moment.[23] Probability was simply a measurement of our ignorance of destiny's outcomes, which explains the otherwise paradoxical fact that Laplace's classic statement of hyper-determinism comes in a "philosophical essay" on probability.

De Moivre's version is especially interesting. He first asserts that "*Chance*, in atheistical writings or discourse, is a sound utterly insignificant: It imports no determinations to any *mode of Existence*; nor indeed to *Existence*, more than to *non-existence*; it can neither be defined nor understood: nor can any Proposition concerning it be either affirmed or denied, excepting this one, 'That it is a mere word'."

De Moivre—a French Protestant exiled to England after the revocation of the Edict of Nantes—believed that statistical regularities (he had in mind such things as the stability of the sex ratio in new-born children) exhibited the wisdom of God's plan for the universe, no less than did Newton's laws and all the other fruits of late 17th century learning. Perhaps not surprisingly he demonstrates antipathy not just to chance, but also to the notion of essential change of any kind.

"[S]uch Laws, as well as the original Design and Purpose of the establishment, must All be *from without*; the Inertia of matter, and the nature of all created Beings, rendering it impossible that any thing should modify its own essence, or give to itself, or to any thing else, an original determination or propensity. And hence, if we blind not ourselves with metaphysical dust, we shall be led, by a short and obvious way, to the acknowledgement of the great *Maker* and *Governour* of all: *Himself all-wise, all-powerful and good.*"[24]

One is struck by the resemblance of this to Bernstein's hostility to the "self-development of concepts" and "other Hegelian delights".

Kant—whose spirit Bernstein called on in his struggle to rectify marxist usage: 'Kant against cant' (1993: 189ff)—was more cautious.

Although "it is evident that the manifestations of this [freedom of the] will, viz. human actions, are as much under the control of universal laws of nature as any other physical phenomena", nonetheless events such as deaths, births, and marriages "are separately dependent on the freedom of the human will". However, "viewed in their connection and as the actions of the human *species* and not of independent beings … the yearly registers of these events in great countries prove that they go on with as much conformity to the laws of nature as the oscillations of the weather." (emphasis added [25])

So much for Bernstein's intellectual affiliations; this recalls Engels, and the way in which the exercise of everyone's will results in what is willed by no one.

The 19th century: social statistics

Given a background in which learned opinion regarded it as axiomatic that there existed a definite and fully determined nature waiting to be known, the discovery in the early and middle 19th century of a host of social regularities naturally caused consternation. Regularity in birth ratios or death rates could be attributed to God's beneficent provision or the working of impersonal physical laws as taste suggested, without much difference to what one believed about society.

But the discovery of stable proportions in the numbers of suicides, murders, marriages or burglaries caused a crisis. The determinism inherent in "French materialism"

[23] The Hume quotation is from the *Treatise of Human nature* (cited Hacking 1990: 12); that from Kant from the *Foundations of the metaphysics of morals* (cited Hacking 199: 12).

If one suspected Bernstein of any deep knowledge of Kant, one might see in the quotation above an explanation of the fact that Bernstein never explicitly argues against or rejects hyper-determinism.

[24] From De Moivre's *The doctrine of chances* page 251-2; cited in Pearson (1978: 161).

[25] I. Kant (1784) 'Idee zu einer allgemein Geshichte in Weltbürgerlicher Absicht', translated by L.W. Beck as 'Idea for a universal history from a cosmopolitan point of view' in *Kant On History* (Indianapolis, 1963); cited Hacking 1990: 15.

suggested that these statistical regularities must be a sign that forces as irresistible as those which kept the planets in their orbits must govern them. The variation from year to year would thus be the result of errors, detected or undetected, in the observational set-up, just as "personal equations" measured the idiosyncrasies of fallible human astronomers.

Since the learned cherished the impression of their own free will at least as strongly as they did that of their learning's superiority to the outlook of the mob, this was distressing.

Controversy ensued between those who drew the conclusion that free will was indeed an illusion—statistical fatalism—and those who dissented. Hacking (1990: 127ff) notes an interesting correlation in this: those who believed in the beneficial working of the invisible hand in Adam Smith's regime of "perfect liberty" went along with statistical fatalism (we have seen above Engels views on this connection in Calvin). But in the empire of "national economy", the administrators of Prussia's statistical bureaucracy deplored *Queteletismus* (the Belgian pioneer had written that "society … prepares the crimes and the guilty person is only the instrument"[26]) and maintained their belief in free will.

Interestingly Engel (not, of course, to be confused with any similarly-named personage), who ran the Prussian Statistical Bureau from 1860 to 1882, was a founder member of the *Verein für Sozialpolitik*—the *Kathedersozialisten*. Even more interestingly, Hacking is able to illustrate his thesis on the links between economic and probabilistic doctrines by the career of a turncoat—no less a individual than Adolph Wagner, the last object of Marx's scorn for vulgar political economists.

[26] See Hacking 1990: 114.

Wagner's first incarnation was as a *laissez-faire* free-trader, in which guise he went out of his way to agree with *Queteletismus* (Hacking 1990: 130). But about 1870 he changed his mind, became a founder professor-socialist alongside Engel, and began attenuating his fatalism.

In the midst of this debate the best mechanical materialists did not overlook the problem of giving a natural account of free will. One attempt was the interest shown in the work of the French mathematicians Saint-Venant and Boussinesq on differential equations with so-called 'singular solutions' (equations where, for some point a, taking values less than but arbitrarily close to a gives solutions wildly different to those resulting from choosing points arbitrarily close to but larger than a).

Someone of the stature of James Clerk Maxwell believed that this was the physical loop-hole that admitted free-will into a materialist account.[27] In Hacking's words: "Most of the time what we do is routinely foreordained. But occasionally we are in the presence of a physical singular point, when by a choice of one of two acts, arbitrarily close together, we can achieve totally different effects. Free will operates, as it were, through the infinitesimal interstices of singular solutions."

Maxwell compared the situation to that of a pointsman on a railway, who does nothing most of the time, but can direct trains onto different tracks at the crucial moment, although he noted that "Singular points are by their nature very isolated, and form no appreciable part of the continuous source of existence."

[27] Karl Pearson claimed to hold a letter by Maxwell describing the French writers' work as "epoch-making … the great solution to the problem of free will" (1978: 161, cited by Hacking (1990: 155)).

VI: Conclusion

Bernstein shows no sign of being aware of any of the 19th century debate over hyper-determinism; and, if he had been, his dislike of dialectics would have hobbled his ability to make anything of it. As it is, he is unable to clearly distinguish hyper-determinism from historical materialism—with the result that he himself falls into precisely the crude economic determinism which he claims to decry. Indeed, after at first complaining that Marx and Engels failed to always give enough weight to (supposedly) non-economic influences, Bernstein's hostility to "political expropriation" drives him to scold them for being insufficiently determinist in their outlook.

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