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The dogs that didn't bark

Marx and Engels and statistical fatalism

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Note This paper is at a very early stage; its present form is principally intended to support discussion at the seminar. As such it is long on quotation but rather shorter on explanation and discussion.

Society ... prepares the crime
Quetelet (1832)

Men make their own history ...
Marx (1852)

'The dog did nothing in the night-
time.'

'That was the curious incident.'
Conan Doyle (1892)

Introduction

This paper is about a nineteenth-century debate about causality – but, unusually, we emphasise what was *not* said, and those who did not take part. We begin by recapitulating the debate on so-called statistical fatalism, precipitated by the discovery of dependable regularities in such social phenomena as suicide and crime, and fuelled by the notorious claim that 'society ... prepares the crime' (Quetelet 1832). Our account follows Hacking (1990), but we emphasise the links between the protagonists' views on statistical fatalism and their positions on other questions in social and economic thought.

Next we review the familiar claim that the doctrines of Marx and Engels were determinist in character, a claim which this paper is intended to help refute.

We then show that Marx and Engels, taken together, were interested in and familiar with the relevant issues, and with Quetelet's work, had distinctive views on the philosophical issues involved, and would have been motivated to intervene given the wider positions of the actual participants. In the course of this we suggest what their response might have looked like, had they provided one; little space is devoted to the question of why they did not do so.

The intellectual background to determinism and probability

Pre-19th century: chance and the mob

Before the rise of social statistics in the early years of the 19th century two apparently contradictory intellectual positions maintained a state of peaceful co-existence: on the one hand, belief in a clockwork universe governed by determinist natural laws; on the other, a belief in an afterlife in which humans went either to heaven or to hell, depending on their conduct on earth. Unless one was a Calvinist, posthumous reward or punishment could plainly only be justified on the assumption that conduct was the result of choices arrived at by the exercise of untrammelled free will.

The inevitable result was a dualist philosophy of mind, in which human consciousness in effect resided in some supernatural corner of the physical body exempt from determinations brought about by physical causes, but nevertheless capable of determining effects in the physical world (see, for example, Hodgson 2001:5). In thus being an uncaused cause, humans were made in the image of their supposed creator. As Hodgson points out, this has its counterpart in modern social science, which evades coming to terms with the clear demand of modern natural science that causal explanations involve rearrangement or transformation of physical matter or energy, as a necessary but not sufficient condition of being a cause.

In this period, 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.¹ Probability was simply a measurement of our ignorance of

¹ The Hume quotation is from the *Treatise of Human nature*, that from Kant from the *Foundations of the metaphysics of morals* (both cited Hacking 1990: 12).

destiny's outcomes, which explains the otherwise paradoxical fact that Laplace's classic statement of hyper-determinism comes in a 'philosophical essay' on probability.

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)

De Moivre's version is especially interesting. He 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.*'

De Moivre, *The doctrine of chances* page 251-2; cited in Pearson (1978: 161)

Kant 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.' (cited Hacking 1990: 15, emphasis added²)

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.

² 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).

But the discovery of stable rates of such things as suicide, murder, marriage and burglary caused a crisis. The determinism inherent in what Engels called 'French materialism' suggested that these statistical regularities must be a sign that forces as irresistible as those that 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.

Society prepares the crimes

As the first of our epigraphs illustrates, it is easy to interpret the discovery of regularities in social phenomena as implying inescapable determination of human action by social laws: 'society ... prepares the crime: the guilty person is only the instrument who executes it', as Quetelet wrote enthusiastically to his friend Villermé (Quetelet 1832). But in his published *Treatise* he is initially rather more cautious:

Society includes within itself the germs of all the crimes committed, and at the same time the necessary facilities for their development. It is the social state, *in some measure*, which prepares these crimes, and the criminal is merely the instrument to execute them. Every social state supposes, then, a certain number and a certain order of crimes, these being merely the necessary consequences of its organisation.

Treatise, page 6, emphasis added

Note the careful qualification 'in some measure'; Quetelet forgets this later when he repeats his letter to Villermé (page 108). Even with this qualification, he is well aware that he is treading dangerous ground: even a tentative suggestion that human actions are regulated by fixed laws, in the climate of the time, may bring accusations of fatalism and materialism: 'it may ... be asked, what becomes of human free-will and agency?' His response to this is ingenious: the accusers undoubtedly wish to ameliorate society by mending laws and morals – but this itself assumes materialism:

I repeat, that in a given state of society, resting under the influence of certain causes, regular effects are reproduced Observe, that I have said *under the influence of the same causes*; if the causes were changed, the effects also would necessarily be modified. As laws and the principles of religion and morality are influencing causes, I have then not only the hope, but, what you have not, the positive conviction, that society may be ameliorated and reformed.

Preface to English translation of the *Treatise*, page vii, emphasis in original

Moreover, everyday practice shows that everyone is an unconscious materialist:

What! when it is necessary to take the most simple resolve, we are under the domination of our habitudes, our wants, our social relations, and a host of causes which, all of them, draw us about in a hundred different ways. These influences are so powerful, that we have no difficulty in telling, even when referring to persons whom we are scarcely acquainted with, or even know not at all, what is the resolution to which they will lead such parties. Whence, then, this certainty of foresight, exemplified by you daily, if you were not convinced, at the outset, that it is extremely probable the empire of causes will carry it over free-will. In considering the moral world a priori, you give to this free-will the most entire latitude; and when you come to practice, when you speak of what passes around you, you constantly fall into contradiction with yourselves. You foretell the conduct of individuals,

in whose case oscillations may take place within limits so large, that it would be contradictory to all the principles of the theory of probabilities to take them for the types of calculations, or to found upon them the most petty inferences. Be more consistent with yourselves.

Immediately following this he hints that those who affect a different view are hypocrites who fear the social consequences of the application of science to human affairs:

Could you possibly be afraid of applying the calculus of chances to moral phenomena, and of the afflicting consequences which may be inferred from that inquiry, when it is extended to crimes and quarters the most disgraceful to society?

As we have already seen, Quetelet was a social reformer, albeit of a cautious stamp following youthful adventures; early Saint-Simonian influences gave way to participation in a reformist discussion circle, the Society of Twelve, which was suppressed in 1826. This was awkward company for a member of the Royal Academy (1820) and a lecturer at the Belgian Military School. Moreover, he took fright at the events of 1830 and 1848 (Hacking 1990: 113). Later he was an associate of Babbage and Nassau Senior and similar liberals.

Hence, perhaps, the prudent tone a few pages on in the *Treatise* (page 9):

In respect of the charge of materialism, it has been reproduced so often and so regularly on every occasion when science attempted to make a new step, and when the spirit of philosophy, breaking through its ancient barriers, attempted a new road, that it seems almost superfluous at the present day to reply to it, the more especially that the fanatical spirit is no longer backed with chains and tortures. It can scarcely now be deemed an insult to the Divinity, that man exercises the noblest of his faculties by directing his meditations towards the sublimest laws of the universe, by endeavouring to explain the admirable

economy and the infinite wisdom which presided at its formation. ...

Having thus observed the progress made by astronomical science in regard to worlds, why should not we endeavour to follow the same course in respect to man? Would it not be an absurdity to suppose, that, whilst all is regulated by such admirable laws, man's existence alone should be capricious, and possessed of no conservative principle? We need not hesitate in asserting, that such a supposition, and not the researches we propose making, would be injustice to the Creative Power.

De Moivre himself might be mollified (albeit possibly ambivalent about the sly reference to the waning power of the Inquisition).

Anti-Queteletismus

Hacking notes an interesting correlation in the debate over statistical fatalism: those who believed in the beneficial working of the invisible hand in Adam Smith's regime of 'perfect liberty' went along with statistical fatalism. But in the empire of 'national economy', the administrators of Prussia's statistical bureaucracy deplored *Queteletismus* and maintained their belief in free will (1990: 127ff).

They feared all sorts of undesirable consequences if the mob got hold of the idea that its members were not really responsible for their own actions; for example, the Leipzig statistician G.F. Knapp:

The French school, always absorbed in the astronomical preoccupations of its founder, sees in man, who lacks freedom of the will, only a being who is subjected to some sort of independent and external force, one which has the remarkable knack of making man, who is not conscious of this force, yet feel responsible for his actions.

The German school ... finds this French interpretation perverse and untenable ... it is a

mistake to say that existing regularities can be explained only by such external laws. The regularities establish for the careful thinker only the existence of some powerful causes, whether they be external to the agent or internal. ...

Queteletismus [must lead to] nihilistic rejection of the state and its duties, and the release of the individual from all bonds of society ... which at present leads, on French soil, to the greatest catastrophe of our time.

Lecture given 29 April 1871, *i.e.* during the Paris Commune, 18 March–28 May, 1871;
cited Hacking (1990:125)

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 an individual than Adolph Wagner, the last object of Marx's scorn for vulgar political economists.

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.

Physics and free-will

In the midst of this debate physical scientists 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.³ 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.'

Were Marx and Engels determinists?

'A Calvinist without God'

I have not (yet) been able to find any explicit trace of the debate on statistical fatalism in Marx and Engels' writings. This has not prevented many commentators from crediting both writers with the most rigid determinism, though some are prepared to credit more of this to Engels than to Marx. For example Hodgson (1991: 6) asserts that Engels is a 'reductionist causal monist' (one who believes that intention is completely reducible to material relations), but says that it is uncertain whether Marx was a reductionist monist or a dualist.

³ 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).

Hacking's discussion is particularly pertinent. He mentions Marx three times, on pages 8, 39 and 132 (1990). The first is a note of Marx's comment about 'iron necessity'⁴; the second contrasts 'moral-science-as-history' – supposedly embraced by Condorcet, Hegel and Marx – with 'moral-science-as-(probability, statistics, decision theory, cost-benefit analysis, rational choice theory, applied economics, and the like)'; the third reads:

[I]n the case of historical determinism, the poles exactly parallel to those of Durkheim and Weber are those of Buckle and Marx. Buckle read the statistics and purveyed a purely statistical fatalism. Marx read the statistics of Engel or Quetelet of Farr with indifference, divining with their aid the underlying laws of society that bind it in a totally nonstatistical necessity.

We will show below that Hacking's final sentence is doubly wrong. Notwithstanding some comments apparently to the contrary, we believe that Marx began and ended his career an adherent of the sentiment of our second epigraph⁵.

In the meantime, a possible case for regarding Marx and Engels as determinists might be to cite Bernstein's influential interpretation of their work to this effect, and note that having been hand-picked by them to edit the newspaper of the German Social Democratic

⁴ 'I say nothing of Karl Marx fabricating an iron necessity out of the very same numerals, the identical official statistics, that I have incorporated into an account of the taming of chance.' The reference is to Marx's Preface to *Capital* (see below), and is obviously a crucial exhibit in the case for Marx as determinist; for the present paper I will rely on the weight of contrary evidence to overwhelm it.

⁵ From the introduction to *The Eighteenth Brumaire of Louis Napoleon*. As is well-known, the full version is 'Men make their own history, but they do not make it as they please; they do not make it under self-selected circumstances, but under circumstances existing already, given and transmitted from the past. The tradition of all dead generations weighs like a nightmare on the brains of the living.' A similarity with Quetelet's outlook will be noticed. Our contention is that this notion of freedom within constraint is also Marx's.

Party, he had both their *imprimatur* in respect of his own outlook and ample opportunity to familiarise himself with theirs.

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 been published under the title *The preconditions of socialism*.⁶ 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

⁶ 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).

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 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, emphases 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 cited above. 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).

Kolakowski's classic survey of marxist thought (1978) suggests that, besides Bernstein, Kautsky (page 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 (all references are to 1978 Vol. II).

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). We hope to show that this view of Engels is wrong, and that he shared Marx's anti-determinism.

Turning from intellectual history to practical politics, we may note the testimony of Bertrand Russell. In a series of six Fabian lectures⁷ in 1896 Russell offered an account of the past history and present activities of the SPD, the latter clearly informed by first-hand

⁷ Bernstein apparently discovered the shortcomings of Marx and Engels while giving a Fabian lecture in 1897 (Tudor 1993: xix). His topic was 'What Marx really taught'.

observation in Germany. Russell's discussion of Marx is so slight as to be laughable⁸ 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)

⁸ 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. 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.

Thus it seems that Bernstein very largely was 'speaking the language that was spoken', and in more than one respect.⁹

However, it is the contention of this paper that what Bernstein and virtually all his contemporaries and followers had in common was that they failed to realise that what they were speaking was *not* the language of Marx and Engels.

Marx on free will, suicide, and probability

The swerve of the atoms

Marx's doctoral thesis was written explicitly to defend free-will against determinism (McLellan 1980: 59). He compares the atomist physics of Democritus and Epicurus and defends the latter's doctrine of the declination, or 'swerve', of the atom against the scorn of intervening commentators precisely because this theory is designed to permit free-will. Marx says of the two:

Now Democritus uses necessity as a form of reflection of reality. Aristotle says of him that he traces everything back to necessity. Diogenes Laertius reports that the vortex of atoms, the origin of all, is the Democritean necessity. More satisfactory explanations are given by the author of *De placitis philosophorum*:

'Necessity is, according to Democritus, fate and law, providence and the creator of the world. But the substance of this necessity is the antitype and the movement and impulse of matter.'

A similar passage is to be found in the *Physical Selections of Stobaeus* and in the sixth book

⁹ 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 language which was spoken' (*Selected Political Writings*, p.134, cited by Tudor, 1993: xxxi).

of the *Praeparatio evangelica* of Eusebius. In the *Ethical Selections* of Stobaeus the following aphorism of Democritus is preserved—it is almost exactly repeated in the 14th book of Eusebius: human beings like to create for themselves the illusion of chance—a manifestation of their own perplexity, since chance [*Zufall*] is incompatible with sound thinking. *Simplicius* similarly attributes to Democritus a passage in which Aristotle speaks of the ancient doctrine that does away with chance.

Contrast this with Epicurus:

‘Necessity, introduced by some as the absolute ruler, *does not exist*, but some things are *accidental*, others depend on our *arbitrary will*. Necessity cannot be persuaded, but chance is unstable. It would be better to follow the myth about the gods than to be a slave to the *heimarmene* [what has been decreed, destiny] of the physicists. For the former leaves hope for mercy if we do honour to the gods, while the latter is inexorable necessity. But it is *chance*, which must be accepted, *not God*, as the multitude believe.’ ‘It is a misfortune to live in necessity, but to live in necessity is not a necessity. On all sides many short and easy paths to freedom are open. Let us therefore thank God that no man can be kept in life. It is permitted to subdue necessity itself.’

Here note that the last two sentences of the preceding appear to be a coy reference to suicide as a remedy for life's difficulties. Marx continues:

The Epicurean Velleius in Cicero says something similar about Stoic philosophy:

‘What are we to think of a philosophy in which, as to ignorant old women, everything seems to occur through fate? ... by Epicurus we have been redeemed, set free.’

Thus Epicurus even *denies disjunctive judgment* so as not to have to acknowledge any concept of necessity. (Marx 1975: 42-43)

There is more in a similar vein. Note that Marx selects texts which explicitly commend chance as a better concept than God: De Moivre would have been appalled.

The key point that the declination of the atom is derived dialectically from its concept, but not as a matter of necessity: 'Democritus, in contrast to Epicurus, transforms into an enforced motion, into an act of blind necessity, that which to Epicurus is the realisation of the concept of the atom.' (Marx 1975: 52). For Democritus, the natural motion of the atoms is straight downwards (its 'fall') – but Marx agrees with the commentary of Lucretius that, if so, it is hard to see how nature produces any further determinations, since none of the atoms will interact: '[I]f the atoms were not to decline, neither their repulsion nor their meeting would have taken place, and the world would never have been created' (Marx 1975: 52).

Peuchet on suicide

The problem of suicide seems to have loomed large in the debate on statistical fatalism. Hacking devotes two whole chapters to it (chapters 7 and 8), accounting for 17 pages, and his index refers to another seven pages where it is discussed. When Quetelet gets round to discussing the development of man's moral qualities in Chapter Two of Book Three, his first concern is 'Of suicides and duels' (page 80); only subsequently does he consider the statistics of crime.

No doubt this is because suicide must seem at first glance to be the ultimate exercise of free-will – but if the number of these is much the same in every year one thinks that there must be some external cause, in the same sense that one supposes there are external causes behind the fact that the rate of death from heart attacks is much the same from one year to another. Clearly, no one imagines that having a heart attack is a voluntary act

At all events, the phenomenon exercised considerable fascination for the public of the 1840s – so much so that Marx translated and edited a sensational French text on the topic

for the benefit of radical German readers. This was the chapter on suicide in Peuchet's *Memoirs from the police archives*, published in 1838 some eight years after the author's death; translated by Marx apparently in September 1845 (Plaut 1999:11) for the *Gesellschaftsspiegel* (or *Mirror of Society*) and published 1846. Since Marx did not hesitate to not merely edit, but interpolated his own views where they varied from the original, we can infer Marx's own opinion in some detail from the implied contrast with Peuchet.

The text opens with Peuchet describing 'the yearly toll of suicides' as being 'to some extent normal and periodic'; Marx immediately intervenes, altering Peuchet's comment that this 'has to be viewed as a symptom of the fundamental defect of our society' by substituting 'deficient organisation of our society' (page 47); next Peuchet (and hence Marx) notes that although the suicide rate varies with the state of the economy and 'penury' is the 'greatest source', yet it is found among the idle rich as well as among artists and politicians. The police archivist adds:

Above all, it is absurd to claim that an act, which occurs so often, is an unnatural act. ...

What is contrary to nature does not occur. It lies, on the contrary, *in the nature of our society* to cause so many suicides, while [the Berber and] the tartars do not commit suicide. *Not all societies bring forth the same results.* We must keep this in mind in working to reform our society to allow it to reach a higher level. (pages 47-48, emphases Marx's; text in square brackets omitted by Marx).

Thus Marx here adopts the same position on the dependence of suicide statistics on the *particular* organisation of society that we have seen with Quetelet. Most interestingly, Marx omits the continuation of this passage in the original, which reads:

Whatever the determining motive of suicide may be, it is certain that its action has an *absolute* power over the will. So why be astonished if until now everything that has been said or done to conquer this blind drive has remained powerless and if our legislators' and

moralists' attempts have also failed. The understanding of the human heart can only be achieved if one possesses the quality of mercy and the compassion of Jesus. (page 49, emphasis added)

No doubt the piousness of the final sentence sat ill with Marx and his intended readers. But the piety depends for its force on the preceding sentences, and particularly on the word 'absolute'; as we have already seen from his discussion of Epicurus, Marx may have seen suicide as an expression of free will, not of its supercession. Certainly he associated necessity with religion.

Probabilism in Marx's critique of political economy

Marx's approach to political economy is not only statistical but probabilistic in character from his first engagement with the subject, through his worked-out system in *Capital*, to some of his final thoughts. In his notes on Mill (written in the first half of 1844) he discusses the relation between prices of production and values in intrinsically probabilistic terms:

[I]n his demonstration that the cost of production is the sole factor in the determination of value Mill succumbs to the error ... of defining an *abstract law* without mentioning the fluctuations or the continual suspension through which it comes into being. If e.g. it is an *invariable* law that in the last analysis - or rather in the sporadic (accidental) coincidence of supply and demand - the cost of production determines price (value), then it is no less an *invariable law* that these relations do not obtain, i.e. that value and the cost of production do not stand in any necessary relation. Indeed, supply and demand only ever coincide momentarily thanks to a previous fluctuation in supply and demand, to the disparity between the cost of production and the exchange value. This is the *real* movement, then, and the above-mentioned law is no more than an abstract, contingent as one-sided movement in it. Yet recent economists dismiss it as accident, as inessential. Why? Because if the economists were to attempt to fix this movement in the sharp and precise terms to

which they reduce the whole of economics this would produce the following basic formula:

laws in economics are determined by their opposite, lawlessness. The true law of economics is *chance*, and we learned people arbitrarily seize on a few moments and establish them as laws.' (emphases in original)

The ideas of this passage are repeated in Marx's pamphlet *Wage labour and capital* – originally written as a lecture to the German Workingmen's Club in Brussels in 1847 – where he summarises his thought thus: 'the total movement of this disorder is its order'; still clearer is the formula in *The poverty of philosophy* (chapter 1, section 2), written in the winter of 1846-47 against Proudhon:

If M. Proudhon admits that the value of products is determined by labour time, he should equally admit that it is the fluctuating movement alone that in a society founded on individual exchanges makes labour the measure of value. *There is no ready-made constituted 'proportional relation', but only a constituting movement.* (emphases added)

The relation between value and labour is the heart of all controversy over Marx's political economy, of course. No part of it is more controversial than the 'transformation problem' addressed by Marx in Volume III of *Capital*; in this Marx claims that 'prices of production', different to the prices that would obtain if commodities exchanged in proportion to the labour used to produce them, serve to bring about equalisation of profit rates (which would otherwise be unequal – according to Marx's theory of value – because of varying proportions in the labour and capital employed and hence in the surplus value captured by a given total capital advanced.

The prices of production are not *market* prices; rather

The market-prices rise above and fall below these regulating prices of production, but these fluctuations mutually balance each other. If one examines price lists over a more or

less long period of time, and if one disregards those cases in which the actual value of commodities is altered by a change in the productivity of labour, and likewise those cases in which the process of production has been disturbed by natural or social accidents, one will be surprised, in the first place, by the relatively narrow limits of the deviations, and, secondly, by the regularity of their mutual compensation. The same domination of the regulating averages will be found here that Quetelet pointed out in the case of social phenomena.

Marx (1980: 1000)

As we have now arrived at a direct connection between Marx and Quetelet we turn to that, and relegate to an appendix illustrations of the intuitive, but sophisticated, statistical approach adopted in other key passages in Volume III.¹⁰ A further appendix deals with Marx's 'Notes on Wagner'.

Marx and Quetelet

We have shown that Marx was familiar with literature relevant to the rise of social statistics in the early 19th century, and to the eventual debate on statistical fatalism – his interest in chance and necessity, his translation of a text on suicide. We have also shown that he adopted a fundamentally probabilistic outlook from the start of his work on political economy.

But a puzzling feature of all this is that these early interests cannot be linked to any direct engagement with Quetelet.¹¹ This is in spite of the fact that Marx not only lived in

¹⁰ We forego entirely a consideration of a number of relevant passages in the *Grundrisse*.

¹¹ This may explain the paucity of existing published discussion of their connections; exceptions are Davis (1997: 11-17), Evans (2004 [1975]: 103-105), and Horvath (1977). The first two are rather slight; we have not been able to consult Horvath.

Brussels when Quetelet was at the height of his fame but, as we have seen, composed during this period *Wage labour and capital*, a key exhibit in our argument.

In fact, the first definite evidence of Marx reading Quetelet is a notebook dating from late 1851 containing excerpts from the *Treatise* (Marx read the English edition of 1842). Marx's only important citations of Quetelet are in *Capital*: the one already noticed from Volume III, together with another, dealing with the concept of social labour, in Volume I, chapter 13.¹²

For the moment we have to leave this as a puzzle, but its solution would seem to lie in further consideration of his work on Democritus and Epicurus (absent the discovery of some missing notebook); we might also give some weight to the general intellectual atmosphere of Paris and Brussels in the mid-1840s.

The important thing for present purposes is that Marx was – eventually – not merely aware of Quetelet but clearly influenced by him.

Engels on chance and necessity

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)

¹² In the history of Marx as statistician, we think this passage will prove very important. Its understanding of social labour can be read as a prefiguration of concepts relevant to the stable family of distributions (first discussed in a technical sense by Paul Levy in the 1920s). The text is briefly reviewed in an appendix.

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 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 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). 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). 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.

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. 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.¹³ 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).

¹³ 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.

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.

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 force 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).¹⁴

Conclusion

The final quotation of the previous section dates from 1890; it may be compared with Marx's of 1846-47 in *The Poverty of Philosophy*: 'There is ... only a constituting movement.' Only a few years earlier Engels had written, in the preface for the first German edition (1884) that '[o]nly through the fluctuations of competition ... does ... the determination of the value of the commodity by the socially necessary labour time become a reality'.

In other words both writers regard the law of value is an unintended consequence of a competitive capitalist economy: 'what emerges is something that no one willed'. Social processes acquire the appearance of natural law, even though they may be the product of indefinitely many acts of individual free will.

¹⁴ Letter to J. Bloch, 21-22.9.1890; MESC, p.499 (Tudor 1993: 15). Bernstein cites this from *Sozialistischen Akademiker*, October 1895.

As discussed here, we have only a theory that reconciles intentionality with the coercive character of social laws, not one that reconciles both with 'rearrangement or transformation of physical matter or energy' (Hodgson) or 'matter in motion' (Engels) as a necessary component of physical causal explanation. However, it is uncontroversial that both Marx and Engels wished for such a reconciliation, and we have seen that Marx explicitly praised Epicurus' physics for its attempt to ground free-will in nature.

This is evidently a doctrine of emergentist causal monism, as described by Hodgson (2001: 7):

Intentions are regarded as emergent properties of the workings of materialist causes within the human nervous system. Intentions arise out of materialist causes; they are complex transformations of materialist causality.

Although intentions are not completely reducible to material relations, nevertheless both the formation and implementation of intentions always involve the rearrangement or transformation of physical matter or energy.

Hence any adequate explanation of the detailed processes of deliberation and reasoning must both involve and be consistent with materialist causality.

Thus Hodgson is wrong in attributing different theories of causal explanation to Marx and Engels. And, we have shown, Hacking was doubly wrong in his claim that Marx's reading of Quetelet made him a determinist: not only was Marx not a determinist, but he does not appear to have read Quetelet until his own probabilistic outlook was already well-developed.

Appendix I

Marx's statistical concepts in *Capital* Volume III

This appendix supports our claim that Marx's argument in this volume relies on an intuitive but sophisticated statistical conception of his problem. According to Marx:

Competition distributes the social capital between the various spheres production in such a way that the prices of production in each of these spheres are formed after the model of the prices of production in the spheres of mean composition, i.e. $k + kp'$ (cost price plus the product of the average rate of profit and the cost price) ... the rate of profit is thus the same in all spheres of production, because it is adjusted to that of these average spheres, where the average composition of capital prevails. ... Between those spheres that approximate more or less to the social average, there is again a tendency to equalization, which seeks the 'ideal' mean position, i.e. a mean position which does not exist in reality. In other words, it tends to shape itself around this ideal as a norm.

Marx (1981: 273)

Note that Marx says that the tendency to profit rate equalisation is a tendency 'to *shape itself around* this ideal [mean] as a norm' (our emphasis); in other words, profit rate equalisation *is* the 'shape around the ideal' towards which the tendency is directed – in other words, it is the formation of a profit-rate distribution ('shape itself around' the mean). This might be thought a fanciful interpretation, were it not that a few pages later (Marx 1981: 283-4) Marx not only describes a probability density, but also discusses how variations in its shape – symmetric or not, light- or heavy-tailed – will affect the relation of the mean to the whole; he even considers the effect of censoring some of the data:

The matter will be represented most easily if we conceive the entire mass of commodities, to start with that in one branch of production, as a single commodity, and add together the sum of the prices of the many commodities to arrive at one price. What we said of the

individual commodity now applies word for word to the mass of commodities of a certain branch of production which are to be found on the market. The fact that the individual value of a commodity agrees with its social value is now realized in, or subsequently determines, the fact that the total quantity contains the socially necessary labour involved in its production and that the value of this mass equals its market value.

Let us now assume that great quantities of these commodities are produced in something like these same normal conditions, so that this value is also the individual value for the individual commodities making up this mass. If only a relatively small proportion are produced in worse conditions, and another portion in better conditions, so that the individual value of the one part is greater than the mean value of the great bulk of the commodities, and that of the other part lower than this mean, then these two extremes will cancel one another out so that the average value of the commodities at the extremes is the same as the value of the mass of average commodities ...

[the distribution is symmetric with light tails]

... and the market value is determined by the value of the commodities produced under average conditions. The value of the overall mass of commodities is equal to the actual sum of values of all individual commodities taken together, both those produced in average conditions, and those produced in better or worse ones.

[Marx defines the total probability mass]

In this case ...

[that of the symmetric distribution described above]

... the market value or social value of the mass of commodities – the necessary labour-time

they contain – is determined by the value of the great middling mass.

[that is, the distribution has sufficiently light tails that the mean is defined]

Now assume on the contrary that the total quantity of the commodities in question brought to market remains the same, but the value of those produced under better conditions is not balanced out by the value of those produced under better conditions, so that the part of the total produced under worse conditions forms a relatively significant quantity, both vis-à-vis the average mass and vis-à-vis the opposite extreme.

[in other words a skewed distribution with one heavy tail containing the commodities produced under worse conditions]

In this case it is the mass produced under the worse conditions that governs the market, or social, value.

[by shifting the mean away from the mode; Marx then points out the opposite case before adding]

We leave aside here the situation where the market is over-supplied, in which case it is always the proportion which is produced under the most favourable conditions that governs the market price; ...

[censoring one tail will also shift the mean]

If we are right in interpreting Marx as having in mind something corresponding to the modern notion of the probability density function then he would seem to be some way ahead of Quetelet, who considered explicitly only ranges and averages¹⁵ (Mosselmans 2005), and indeed of Galton. Not only is Galton's interest in deviations from the average clearly also present in Marx, but the latter's discussion of skewed and heavy-tailed distributions is ahead of Galton, who dubbed the Gaussian distribution 'normal' (Hacking 1990: 184).

Appendix 2

Marx's 'Notes on Wagner'

Marx's comments are directed to Wagner's notice of his own work, but are mainly a critique of Wagner's exposition of the idea that use value regulate the exchange value of commodities; however, the following passage is of interest; Marx begins by quoting Wagner:

'However, in free commerce the costs are *not* the *sole* basis for determining exchange-values and prices, and cannot be in *any conceivable social situation*. For regardless of costs, there must always occur *fluctuations in use-value and need*, whose influence on *exchange-value and prices* (both contract and tariff prices) then modifies the *influence of costs*, and is bound to do so,' etc. (pp. 58, 59). 'The' //i.e. this!! 'astute correction of the socialist doctrine of value ... we owe to *Schäffle*' (!) who says in *Soz. Körper* III, p. 278: 'No matter what kind of social influence over needs and production exists, there is no avoiding the fact that all *needs* always remain in equilibrium qualitatively and quantitatively with production. But if this is so, *the social cost-value quotients cannot simultaneously be considered proportionally as social use-value quotients*' (p. 59, Note 9).

¹⁵ However, Quetelet's appeal to the correction of astronomical observations, in his justification of the 'average man', certainly *implies* the Gaussian distribution (Mosselmans 2005).

That this merely amounts to the triviality of *market-prices* rising and falling above or below value and to the assumption that the theory of value developed by him for *bourgeois* society is predominant in the 'Marxian social state' is shown by Wagner's phrase:

'They' (prices) 'will occasionally deviate from them' to a lesser or greater extent, rising for goods whose use-value has become greater and falling for those whose use-value has become smaller. Only *in the long run* will costs continually assert themselves as the decisive regulator' etc. (p. 59).

The triviality Marx complains of is the opposite error to that of 'the whole Ricardo school', criticised in the 'Notes on Mill'; Wagner is interested only in market deviations, whereas the Ricardians are interested in something important, the ultimate role played by the cost of production. As we have seen, Marx views the two poles as equally important.

Note: the text quoted here is that provided by the Marxists Internet Archive: see <http://www.marxists.org/archive/marx/works/1881/01/wagner.htm> (emphases as original). An alternative version is in Carver (1975).

Appendix 3

Marx and social labour

In the first footnote to chapter 13 of *Capital* Volume 1 Marx cites Quetelet (and Edmund Burke) in support of his explanation of his concept of average social labour:

'Unquestionably, there is a good deal of difference between the value of one man's labour and that of another from strength, dexterity, and honest application. But I am quite sure, from my best observation, that any given five men will, in their total, afford a proportion of labour equal to any other five within the periods of life I have stated; that is, that among such five men there will be one possessing all the qualifications of a good workman, one bad, and the other three middling, and approximating to the first, and the last. So that in

so small a platoon as that of even five, you will find the full complement of all that five men can earn.' (E. Burke, 1. c., pp. 15, 16.) Compare Quételet on the average individual.

Note that Burke's attention is focussed on the *total* labour performed, *not* the average per worker. Despite frequent to the average it seems clear from the main text that this is also Marx's real focus:

The labour realised in value, is labour of an average social quality; is consequently the expenditure of average labour-power. Any average magnitude, however, is merely the average of a number of separate magnitudes all of one kind, but differing as to quantity. In every industry, each individual labourer, be he Peter or Paul, differs from the average labourer. These individual differences, or 'errors' as they are called in mathematics, compensate one another, and vanish, whenever a certain minimum number of workmen are employed together. The celebrated sophist and sycophant, Edmund Burke, goes so far as to make the following assertion, based on his practical observations as a farmer; viz., that 'in so small a platoon' as that of five farm labourers, all individual differences in the labour vanish, and that consequently *any given five adult farm labourers taken together, will in the same time do as much work as any other five*. But, however that may be, it is clear, that the collective working-day of a large number of workmen simultaneously employed, divided by the number of these workmen, gives one day of average social labour. For example, let the working-day of each individual be 12 hours. Then the collective working-day of 12 men simultaneously employed, consists of 144 hours; and although the labour of each of the dozen men may deviate more or less from average social labour, each of them requiring a different time for the same operation, yet since the working-day of each is one-twelfth of the collective working-day of 144 hours, it possesses the qualities of an average social working-day. *From the point of view, however, of the capitalist who employs these 12 men, the working-day is that of the whole dozen. ... But if the 12 men are employed in six pairs, by as many different small masters, it will be quite a matter of chance, whether each of these masters produces the same value, and consequently whether he realises the general rate of surplus-*

value. ... Of the six small masters, one would therefore squeeze out more than the average rate of surplus-value, another less. The inequalities would be compensated for the society at large, but not for the individual masters. Thus the laws of the production of value are only fully realised for the individual producer, when he produces as a capitalist, and employs a number of workmen together, whose labour, by its collective nature, is at once stamped as average social labour. (emphases added)

For Marx, and the capitalist, the product of the working day is the total labour of the workers employed; this is a random variable found by summing the random variables constituted by the individual labours of each worker, which are social labour only in so far as they are employed by capitalists employing other social labours.

Hence the total product is the sum of independent identically-distributed random variables, in modern language. Moreover, the degree to which the total labour is equal to average social labour multiplied by the number of workers depends on the number of workers employed. Again in modern language, this is to say that the random variable describing individual labour is in the domain of attraction of the random variable describing social labour; it can be shown that the only possible distributions for which this is true are members of the stable family.

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