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Introduction: Physics and Metaphysics

CAPITALISM WOULD on the face of it be seen as integrally *physical*, integrally material.[1] Indeed Marxism – which analyses and in practice is to supersede capitalism – is known as dialectical *materialism* or historical *materialism*. Commodities are physical. The logic of the commodity, of the cause and effect of economic structure on superstructure is modelled on and consistent with Newtonian *physics*. The mechanism of capitalism, the supply and demand, the ubiquitous exchange, is already understood in Renaissance and very early modern Galilean physics. The capitalist commodity is abstract and homogeneous: it is interchangeable with a number of different concrete goods, again very much on the model of the atom in physics. The Karl Marx of *Capital*, of *Das Kapital*, thought the laws of capitalism as akin to the laws of the physical and natural sciences: hence Marx's praise for Darwin's *Origin of Species* in *Capital* (1967: 342, 372). Indeed *Capital*'s capitalism is like a great machine, in which at stake is the reproduction of the total social capital. This is a machine in which the physicality of the means of production engages with the physicality of labour to produce a physical product. Capital in this sense is used in a way that is physical. Capital itself is indeed a 'social relation', a social relation that works through the abstraction of the commodity and of labour-power. In a Newtonian vein, Marx's labour theory of value understands capital to be comprised of congealed, homogeneous abstract labour-time. Yet the commodity and exchange are constituted in the field of the physical. The physical in Newtonian mechanics is abstract, homogeneous and quantitative. There is thus an abstract physicality in Newtonian physics, and in Newton's calculus,[2] that fully filters through the nature of capitalism. Indeed, it is in perhaps such a sense that we might understand technology as 'second nature'.[3]

If capitalism and the economy are physical then where does this leave that residue of the physical, or, better, that which transcends the physical,

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i.e. the metaphysical. How does capitalism stand in relation to metaphysics? For Antonio Gramsci (1973) the superstructure is metaphysical. Gramsci contrasts the infrastructure – the economic infrastructure, which works like a physical mechanism, like a mechanical body – with the *Geist*, the mind, the spirit of the superstructures. Indeed 'hegemony', which is superstructural is essentially metaphysical. Yet, with the determination of the economy, and the subordination of superstructures to economic reproduction, the metaphysicality of the superstructures is relegated to a mere function, and functionality, in which functional prerequisites are interchangeable. Though not reducible to Newtonian mechanical causality, these relations still foreground capitalism as physical.[4] What I want to argue in this article is that the entire operation of capitalism, including the economic infrastructure is becoming metaphysical. Indeed, that if in the national industrial age the principle of the physical was driver of the sphere of the metaphysical, that now the metaphysical principle infects the material base itself and is determinate in regard to the physical.

Let me give some idea of what I mean by metaphysics. Max Weber has pointed to a metaphysical, or religio-metaphysical era prior to modernity. In this, in the world religions – Judaism, Taoism, Islam, Christianity, Buddhism – spirit moves into a transcendental relation to nature. Nature becomes more or less mechanical, while spirit moves into a transcendental sphere. It is now that metaphysics emerges. In the West we receive metaphysics through, *inter alia*, the Platonic idea, Aristotelian substantial forms and Thomist theology. But it is there equally in 'Eastern' religions. Thus Yukio Mishima, in *The Temple of Dawn* (1999), describes Buddhism at great length according to principles, for example of the monadological immortality of the soul, as a cultural formation that is recognizably metaphysical. The world religions, beginning from millennia before Christ through to about the Renaissance, mark the dominance of the metaphysical. The Renaissance – and Galileo, Descartes and Hobbes, alongside Renaissance perspective in art and architecture – signal the rise of the physical: this, of course, in a sort of quiet alliance with the Reformation and its Protestant ethic. The physical then would comprise Newtonian clock-time, Cartesian extension and Renaissance perspective. It embraces metric time and metric space (DeLanda, 2001). Such an age of the physical very consciously defines itself in contrast to Aristotelian, Platonic and indeed Christian metaphysics.

Bruno Latour (1995) has written that we sociologists must 'dare to be metaphysical'. Latour's statement can be understood in the context of his book *We Have Never Been Modern* (1993). Latour says that the modern radical separation of subject and object is a useful myth. He objects to the radically 'physical' nature of the object, and says that instead we inhabit a world of quasi-subjects and quasi-objects. Hence Latour's objects are not strictly physical but already partly metaphysical. For Latour, subjects and objects always were quasi-subjects and quasi-objects. Hence there never was in fact a radical subject–object separation. And we were never modern.

To never have been modern is at the same time always to have been metaphysical. Thus for Latour to say that we must dare to be metaphysical is for him to say that we must dare to be as we always were. Unlike Latour, I am not arguing normatively for metaphysics in this article. And I am not saying that we should dare to be metaphysical. I am arguing from a social *change* standpoint. I am suggesting that we once were predominantly physical, and now in fact we are increasingly metaphysical. I am trying to point to ways in which we, and today's capitalism, are metaphysical.[5]

For present purposes, the clearest contrast of the metaphysical and physical comes via the work of Kant. Perhaps the classic English-language text on Kant's *Critique of Pure Reason* is entitled *Kant's Critique of Metaphysics* (Walsh, 1975). Kant wrote his three critiques late in his life. Kant's 'critical period' is a break with his earlier work, that is, with his metaphysical period. Kant's major influence before his critical period is Leibniz and implicitly Spinoza. The classical sociologist Georg Simmel used Kant to work through his own juxtaposition of the physical and the metaphysical. For Simmel (1995), critical Kant epitomized the physical while Goethe and Nietzsche were the flag-bearers for metaphysics. For Simmel and for us the stakes are high. And this is because such a new metaphysics entails not just anti-positivism, but a break with critique itself. Pre-critical Kant is author of the *Physical Monadology*, in which he uses the metaphysical principles of Leibniz to try to rethink physics. Simmel wrote his PhD thesis on this. In the thesis Simmel rejects the early Kant's metaphysics for a more positivist, indeed Spencerian, viewpoint. The middle and late Simmel, by contrast, is increasingly metaphysical. In other words, Simmel's early positivist and thus 'physical' work criticized early Kantian metaphysics. While Simmel's middle and late, metaphysical, work is addressed against Kant's later physical period. The later Kant gives a physicalist account of knowledge in science and mathematics. He preserves a space for metaphysics in ethics and art. The metaphysical is also famously Kant's realm of freedom, God, infinity and the thing-in-itself. There are then two types of Kantian reason: the physical reason or empirical reason of the understanding (*Verstand*), and, on the other the metaphysical reason that Kant calls *Vernunft*, or Reason itself. For Kant, metaphysical reason is the condition of possibility of physical reason. Yet it is physical or empirical reason that takes pride of place. The late Simmel is explicitly metaphysical, pitting his *Lebensphilosophie* and the principle of life against the mechanical assumptions of the physical. Indeed Simmel's (1999) classic late vitalist book *Lebensanschauungen* is subtitled *Vier metaphysische Kapitel* (Four Metaphysical Chapters).

Four Contrasts

We can understand this juxtaposition of physical and metaphysical in terms of four contrasts. The physical assumes extension, equivalence, equilibrium and the phenomenon, while the metaphysical assumes intensity, inequivalence, disequilibrium and the noumenon.

Extensity versus Intensity

For Descartes there are two substances: *res extensa* and *res cogitans*. *Res extensa* is conceived as mechanism and is physical substance. *Res cogitans* is thinking substance. It is self-organizing and thus reflexive: it possesses its own intensive energy. But this sort of self-organizing substance is also found in animals, even in plants and inorganic matter. Indeed, Aristotle ascribed differing levels of 'teleology' – as distinct from external causality – to animals, man and the gods. Because it is a property also of non-humans it makes sense to contrast extensive substance with, not thinking, but instead *intensive* substance: to speak of not *res cogitans* but instead *res intensiva*. If substance works analogously to mind, on a sort of model of mind, then we can call it intensive. Indeed, classical sociologist Gabriel Tarde (1999) thought of society on this sort of intensive model.

If intensive substances are involved in self-causation, then extensive substances are subject to external causation. If intensive substance like the *cogito* is indivisible, then extensive substances are divisible. They are typically divisible into parts that are identical with one other. Intensive substances are all different from each other. For some thinkers, extensive substances can be broken down into parts so small that they are no longer divisible. These parts are atoms. Although Cartesian *res extensa* is our model for extensity, Descartes was not an atomist. Instead he thought that extensive substance was infinitely divisible. Democritus, Lucretius and many modern thinkers are atomists. Atoms of any substance are identical to one another, such as hydrogen or oxygen atoms in chemistry. Though Descartes was not an atomist, his notion of extensity shared with atomists the core assumption, not of difference but identity. This is that even infinitely divisible substance is divided into parts that are identical with one another. Extensity, in this sense, works from a principle of identity. Extensity is metric. Extensities are measurable. They are measurable through interchangeable units. Such units can be spatial or temporal. Every intensity, in contrast, is different from every other. Gottfried Wilhelm Leibniz's (1991) monads are such intensities. If atoms are consistent with the assumptions of Cartesian extensity or mechanism, then monads are consistent with the Cartesian *cogito*. Only at stake is not the *cogito* but an infinity of singular *cogitos*, all different from one another. This multiplicity of *cogitos*, of intensive substances, may inhabit human bodies, they may inhabit organic or inorganic bodies, or they may, as for Gabriel Tarde, inhabit social bodies. But each is different from every other and each is in some sense of the word intelligent, each embodies some sort of reason. Descartes gives us an ontological dualism of two substances and Spinoza a single-substance or immanentist ontology. Leibniz, for his part, is neither a monist nor a dualist: he gives us an infinity of substances, in which every substance is different from every other. This is a basis of what today is called the ontology of difference (Deleuze, 1968: 286–7).

Equivalence versus Inequivalence (Difference)

Atomism means that things are *equivalents*, somehow homogeneous. There may be many different types of atom. In chemistry we can speak of more than 100 different types of atoms, with different qualities and different extension. But each atom of a given kind, say oxygen, is equivalent to every other atom of that kind. Here each element is a sort of 'species' and each individual (atom) in that species is identical or equivalent to every other one. The commodity presumes that there is only one type of atom. That is, in chemistry the Periodic Table is a sort of 'genus' under which we have more than 100 elements as species, and every individual under each of these is identical to every other one. In Hobbesian political philosophy this is reduced to one type of atom. There is a state, and as far as the state is concerned every individual is equivalent to every other individual. Galileo's influence on Hobbes (as Leo Strauss [1953] noted) is well known. Thus the Hobbesian state is dealing with a world of collisions of atoms, those atoms being the subjects of the state. The Hobbesian political being is later, in its assumptions of identity, Rousseau's citizen and Marx's proletarian. All are atoms, a homogeneous mass under the principle of identity. Hence they were in a class, whether bourgeois or proletarian: they were atoms in a class. This is also the logic of classification: the logic of genus and species. Both class and classification – and there can be no class without classification – partake of the logic of atomism, the logic of the physical. That is, once we start classifying individuals as species, as identical subject-citizens of the state, we are dealing with extensity, with equivalence and the physical. Thus, in an earlier physical capitalism there is a logic of the atom, a political logic of the atom. This is a logic of *equivalence*, in which one atom, one citizen, one proletarian is *qua* citizen, *qua* proletarian, identical to any other. *Metaphysical* capitalism, today's metaphysical capitalism eschews this logic of political identity. It breaks with political identity for a politics of *difference*. This is what Hardt and Negri describe in *Empire* (2000) as the politics of the 'multitudes'. The multitudes are collectives of inequivalences, not of species-beings but instead of individual becomings.

Marx's commodity has a 'two-fold nature'. Insofar as the commodity comprises use-value it does not comprise equivalents. This is because every use-value is different from every other. Like Mauss's gift, things comprising use-value are inequivalents. They are concrete inequivalents. They do not comprise units of anything because their value is indivisible. It is not even that they comprise inequivalent bits. They comprise no bits at all. For the moment, we are concerned with commodities only insofar as they have to do with equivalence. Commodities comprise equivalent units of exchange-value. Commodities are abstract and quantitative as distinct from concrete and qualitative use-values. Commodities are not exchange-values. They comprise exchange-value. These are units of value, each equivalent to every other. The commodities themselves are not identical to one another. They vary, however, only in quantity: in terms of the number of identical units of exchange-value that they comprise.

In the physical, equivalents are either identical units of measurement, such as metric time, metric space or exchange-value (money). Or they are identical units of being, such as atoms. These equivalents stand with respect to one another in relations of collision, (external) cause and exchange. Thus Galileo spoke of nature, spiritless nature, as a space not just of collisions but of *exchanges* (Serres, 1968: 305–6). When the chaos of collisions begins to form patterns, what develop are the laws of cause and effect. These laws of cause and effect put a sort of order on the chaos of collisions previously characterizing nature. Hobbes spoke of his war of all against all in literally the Galilean language of collisions. For him, another type of order must be put on the chaos of collisions and exchanges. This is law and the state: it is normative regulation through law and the state (and later – as we sociologists are so familiar with – the institutions of society). A third space of collisions and exchanges is the economy. Yet whether it is collisions or exchanges or politics or economics or science (and science is the guiding light) or even art and architecture, it is equivalents or atoms that are colliding, exchanging and coming under laws. The third type of chaos, of exchanges, is brought under regulation by the hidden hand of the market. Random exchanges, where A takes the place of B and B takes the place of A, are regularized and come under law. Physics starts with random exchanges of atoms: economics continues with exchange of goods and services.

In physical capitalism, whether in politics, economics, science, law or social institutions, equivalents or atoms come under law. This is the essence of physical capitalism. Physical capitalism in all cases is about law and equivalents. Both dominance and resistance in physical capitalism are about equivalence, law and equivalence. As we saw, Rousseau's people and Marx's proletariat are resistant collectives of equivalence. At stake in metaphysical capitalism are neither concrete inequivalence as in use-value or the gift, nor abstract equivalence such as in exchange-value, but instead *abstract inequivalence*. If the commodity comprises quantities of equivalence then the commodity-fetish comprises abstract inequivalence. Marx and also Baudelaire and Benjamin likened the commodity-fetish to the phantasmagoria, to the dream. Unlike the concrete use-value, the fetish, like the dream, is abstract and intangible. Unlike the identity comprising the commodity, every fantasy, every dream is different to every other. In the contemporary economy, project-networks and other forms of flexible production make one-offs, make things that thus are inequivalent to one another. The labour-time that goes into them is also abstract, unlike that of the use-value. But it is the overlapping, non-metric time of the research and development laboratory or the studio, and hence comprises durations of inequivalence. In consumption, Colin Campbell (1987) very rightly likened the phantasmagoria of consumer culture, to a 'romantic ethic'. The Protestant ethic promotes a controlled metric time of equivalence. In contrast, the romantic ethic – and its critique of such instrumentalism – presumes a logic of difference. Campbell's romantic consumerism presumes

an inequivalent temporality of consumption, that each product must be different from every other and that each consumer is different from every other. This, at the same time, is the distinction between physical capitalism's interchangeable possessive individual and metaphysical capitalism's individualism of difference, whose roots are much more in romanticism. Compare also the physical capitalist commodity with the metaphysical brand. Brands also operate in a sea of inequivalence. A brand's product lines may be tangible, but the brand itself is not. It is abstract. Yet every brand is different from every other. The exchange-value of a commodity is comprised of units of identity. If a brand is not different from another it has no (brand) value. The commodity is divisible into parts consisting of quantities of exchange-value. A brand is not divisible without changing into something else.

Equilibrium versus Disequilibrium

Classical physics presumes that systems are in equilibrium states. Temporality is reversible. Newtonian time is 'clockwork' not just because it is abstract time, consisting of one tick followed by another at equal intervals.[6] It is clockwork time also because if you wind it backwards or forwards you come back to the same point. The same is true of any equilibrium system. The presumption is that perturbations are noise or accident and that the system will return to equilibrium. In neo-classical economics, markets are presumed to return to states of equilibrium. There may be disturbances, but equilibrium is the rule. Thermodynamics, on the contrary, presumes far-from-equilibrium systems and irreversible time. It presumes systems with entropic properties recombining subsequently at higher levels of order and complexity. One of the founders of complexity theory, Ilya Prigogine, was fundamentally influenced by the metaphysics of Henri Bergson. When self-organization takes place, systems are chronically in disequilibrium. When something akin to intelligence, or at least reflexivity, is built into inorganic matter, it too becomes metaphysical. That which is doing the self-organizing is a system's own trace. Its trace, for Varela et al. (1991: 204–6), is the history of its structural couplings with its environment. The self that is doing the self-organizing is this trace of irreversible time and of difference. Every trace, or every history of structural coupling, is different from every other. Once markets are embedded, even if they are embedded in global flows, temporality becomes irreversible and the markets themselves, as systems, move into disequilibrium. Sociology too has moved from 'physical' models of equilibrium to 'metaphysical' disequilibrium. For example, Bourdieu's (Bourdieu and Passeron, 1990) model of simple reproduction presumes equilibrium, as do Talcott Parsons's (1955) linear social systems. Even when the later Parsons (1971) takes on cybernetic concepts, they are there only to return the system to equilibrium. In this model, the system senses perturbations in its environment through feedback loops, and nullifies them to steer the system back to equilibrium. In analysts like Ulrich Beck or Niklas Luhmann, we find disequilibrium. In Beck's 'reflexive

modernization', reflexivity is the self-organizing moment between cause and effect. Reflexivity does not cybernetically – through sensing and regulating devices – regularize perturbations. Instead reflexivity itself – even when it attempts to move to equilibrium – instead gives rise to perturbations or unintended consequences that chronically move the system towards disequilibrium. Luhmann draws on Humberto Maturana and Francisco Varela for his disequilibriate autopoiesis. Here every structural coupling brings in information from the exterior. Perturbation becomes information. Noise becomes information when it makes a difference to the system. Such disequilibriate systems have the best chance of survival. This is because, unlike earlier cybernetic systems, they are open to their environment. They are also open to the extent that they self-organize. This self-organization is through a self that is the history of such information-receiving couplings. When system A couples with system B, the state of system B is communicated as information for system A and vice versa. Each of these couplings is an 'operation'. And in order for a system to couple, or even exist, it must be operationally closed.

The Phenomenal and the Noumenal

Metaphysics, from Plato onwards, has been about the 'in-itself'. 'Physics', in contrast, is about the 'for-itself' or the for-us. Metaphysics has been about the noumenon, physics about the phenomenon. Things, for Kant, are both physical and metaphysical. As physical they are for themselves or for us. As physical we know them via the concepts of the understanding. The thing as metaphysical is noumenal: it is the thing-in-itself. We cannot know these through the concepts of the understanding. The thing-for-itself is a species, it is an atom; it stands in a relation of equivalence to other things. Reason – in the form of the concepts of the understanding – comes to it from the outside as a sort of light on the thing, as universal to particular, as genus to species.[7] In the noumenon, the thing-in-itself Reason is *in* the form. Literally the ideas of Reason come from inside the thing-itself. The thing-in-itself is not the species but the individual, the singularity. Reason suffuses the thing-for-itself. Reason *in*fuses the thing. Hence knowing – as Deleuze suggests in *Différence et répétition* (1968: 324) – in the one case is a matter of 'explication', in the second a matter of 'implication'.[8] The idea comes from inside the thing-in-itself. The idea is that bit of the thing that is like mind. It is the thing's particular ontological structure. This structure, in Leibniz's metaphysics, is the world of that individual thing. It is the world of that thing as a set of relations, and as series of relations. The in-itself is thus, as Leibniz said – and Kant knew – the sufficient reason of the thing.

The thing, the object, the good, the service in metaphysical capitalism is an in-itself. The twofold nature of Kant's thing is replicated in the two-fold nature of Marx's thing, the commodity. Use-value's concrete inequivalence is in important respects noumenal and hence metaphysical. While exchange-value's abstract equivalence, like the thing-for-itself, is physical. In metaphysical capitalism's abstract inequivalence there seems

to be an effective fusion of noumenon and phenomenon. The noumenon, previously transcendental, somehow becomes empirical. The idea is no longer exterior to but interior to production, infusing production. As research becomes research and development, the idea no longer explicates. It implicates. It is *im*plicit in production. It is for example implicit in the product as part of a brand.[9] Property becomes intellectual property. Leibniz's transcendental monad becomes Varela's empirical system. Leibniz's immaterial trace becomes Varela's material history of structural coupling. Ontological difference disappears, between noumenon and phenomenon, between phenomenal base and noumenal superstructure. The idea enters the base at the very heart of the commodity. And the commodity is bent or curved, as it were, to become something else. That something else is a singularity, but not the sort of concrete singularity at stake in use-value. It is more like a neo-commodity. Such abstract singularity takes on life and is a virtual in its own self-transmogrification. The classical and physical commodity is, in Bergson's sense – who contrasts the virtual and the actual – an actual. The neo-commodity is itself a virtual, with a whole range of possible actualizations. Only some of these will be actualized. The neo-commodity is an informational genotype acting out an algorithm of mutations, only some of which will structurally couple with an environment. Only a few of which will attain the status of phenotype (Dover, 2001). Hence there may literally be an economy of virtuals in today's virtual society.

Causation and Metaphysics

According to Aristotle, a thing has four types of cause: efficient cause, material cause, formal cause and final (teleological) cause. *Material* cause is how something is determined by what it is made of – say, flesh and blood, wood, clay – man is made of earth for example in Genesis. A being that determines another being by acting upon it is its *efficient cause*. *Final* or *teleological* cause has to do with the purpose of a thing that is caused. This can be a proximate purpose or an ultimate and divine purpose. And *formal* cause is the extent to which an individual is caused by its form. Let us underscore, Aristotle in *The Physics* (1999) was concerned not with how a form or phenotype or species was caused, but how an individual was caused. And one of the causes was the individual's form or phenotype itself. For example, consider a chocolate, iced, birthday cake with my son Joey's name on it, with a Manchester United Football Club insignia, and his age inscribed in icing on the uniform on the cake – this individual cake, baked by my daughter, Molly, for my son on 3 February 2005. What is to be explained by all the causes is this very singular cake. Here the efficient cause is Molly, the cake maker. The material cause is the ingredients in the cake. The formal cause is the species cake or birthday cake. In this, Joey's fourteenth birthday cake, baked by Molly – i.e. this individual cake – was caused by its form: its cakeness. Just as the formal cause of this journal article submission, is journal article. The final or teleological cause is Joey's

birthday. As in *The Physics*, where Aristotle's final or teleological cause of walking, drugs and surgical instruments is health.

Efficient Cause

Efficient cause is the closest to modern physical and mechanistic causation. Aristotle's examples are the sculptor making the statue and the father causing the son. So we see that efficient cause is external to the thing caused. It is true that, of the four types of causes, it is only efficient cause that contains a dimension of creativity and even energy in the sense of 'puissance' or *potentia* in Spinoza's sense.[10] Hence the cause of *Hamlet* by the genius Shakespeare would be efficient cause. This is creation in the German sense of *schöpfen*: whether creation by God (gods) or creation in the arts. In this sense 'first cause' – whether in Spinoza's or Goethe's metaphysics – would have more in common with efficient cause than with final cause. Final cause would be the extent to which a being was determined by its furthering the ultimate glory of God: where the purpose would be God's glory. Nonetheless I will address first cause below under final cause. That is because it is causation by an ultimate being or ultimate force. The creation of the individual by the efficient cause of the poet, the father, or God is metaphysical. Walter Benjamin (1977) underscores this in his classical essay on the language of man. At stake is the cause of the concrete individual. In the age of physical capitalism what is cause becomes much more generic. It might be the species, as in Darwin. It might be a state for the whole of a population, such as occupational outcome in the sociology of stratification. It might be a universal property of all physical beings, as in, for example, force is equal to mass multiplied by acceleration.

In Marx's analysis of physical capitalism, efficient cause is labour. Marx is interested in the causes of the being or thing that is central to capitalism: the commodity. The commodity is that abstract physical thing – the matter – at the heart of dialectical materialism. The efficient cause of the commodity is labour. What sort of labour is at stake here? It is not labour-power (*Arbeitsvermögen*) or the capacity to labour, because labour-power does not go into the commodity. Labour-power has to do with needs of the capitalist on the market. Thus it comes under teleological cause. Now Aristotle's efficient-cause sculptor is involved in concrete labour. He is making a particular thing. The commodity is an abstract thing. Marx's labourer is the efficient cause of the commodity. His labour is thus not concrete but abstract. Because the commodity is an abstract thing it comprises, not concrete and heterogeneous, but abstract and homogeneous labour. One commodity is distinguished from another by the amount of abstract labour it comprises and the price at which it exchanges on the market. But Marx's theory is the labour theory of value, and what counts here is labour and not exchange.[11] Marx's commodity is comprised of units of labour-*time*: of 'abstract homogeneous labour-time'. Homogeneous in that every unit is like every other: like atomism in physics. In contrast, Aristotle's sculptor works in concrete, heterogeneous labour-time. The

concrete labour process, which has the temporality of Aristotle's sculptor, is indivisible. The commodity and its efficient cause are divisible. Marx, like Ricardo before him, looks at what is previously in Aristotle a metaphysical process of the creation of the individual thing and transforms it via the categories of physics. Or, more precisely, capitalism itself transforms and indeed reduces the metaphysical into the merely physical.

If efficient cause of products before commodification is concrete, heterogeneous labour-time, and in physical capitalism abstract homogeneous labour-time, then in metaphysical capitalism labour-time stays abstract but becomes heterogeneous (Alliez, 1996; Osborne, 1995). This is briefly addressed under inequivalence above. The labour-time of the sculptor or craftsman is qualitative. Physical capitalism's labour-time is metric, hence extensive, and is quantified. It consists of quantitative extensity. Metaphysical capitalism's labour-time is also quantitative. Yet it is not metric. It is indivisible. It is not extensive, but instead intensive. Deleuze would understand it in terms of 'quantitative intensity'. Work in informational capitalism is vectoral, the fractal or other non-metric quantities. It is quantitative, yet indivisible. Benjamin and many others have seen number very much as at the heart of metaphysics. If Euclidean geometry is quantitative and extensive, then number is quantitative and intensive. Hence we can contrast physical quantity with metaphysical quantity. More empirically, in work situations risk calculations and information archives make the future and the past less separable from the present than they were in the metric time of physical capitalism. Finally, much of work in the new capitalism takes place in projects and project-networks: here work-time is regulated by the project itself, whilst making the metronomic time-clock of E.P. Thompson's (2001 [1967]) classical capitalism increasingly irrelevant. So labour-time in metaphysical capitalism is quantitative, but it is not metric (see Delanda, 2001). Finally efficient cause in metaphysical capitalism is heterogeneous in that it is also the labour-time of non-humans: value generation by quantitative intensities such as genetic algorithms and the mathematical functions of financial instruments.

Material Cause

What is *material* cause in physical capitalism? Indeed what is matter? We need to take only one step from efficient cause. Matter is '*congealed* abstract homogeneous labour-time'. It is only now that the commodity has *value*. This is the 'labour-value' that goes into it. It is different from use-value and exchange-value, both of which have to do with purpose and come under teleology. So, once constituted through efficient cause, material cause is what drives dialectical materialism, which is physical capitalism. Around itself it constitutes the base, which then causes the superstructures. This labour-value is the 'value-substance' of the commodity, what Marx in the *Grundriße* (1973) called *Wertsubstanz*. This value-substance – and for Marx substance and matter are the same – is at the heart of the commodity-form. Substance – or matter – here *cause* form. The value-form or commodity is quantified

through exchange-value. Exchange-value is a question of function rather than structure. It is not internal to the commodity, which is structurally generated by its substance, by its value-substance. Exchange-value has to do with need and purpose: it is confirmed exterior to the commodity by the demand and supply of it. It has to do with the commodity-form's environment. Exchange-value is determined through teleological or functional causation. But the commodity-form is at the same time structurally caused through the congealed labour-time of value-substance. Material cause is structural cause. This is also structure that is causing form. This matter or structure is also the cause of the superstructures, the ideological and political forms. These are not to be explained functionally. These forms are not the conditions of existence of the material base. At stake is structural causation. Material base and superstructure. *Bau* and *Überbau*. *Bau* has to do with building, with load-bearing functions: the *Bau* must support the *Uberbau*. Structure in architecture means literally load-bearing qualities. In architecture, form is supported by structures. Structure has to do with engineering. The *Bau* is as much the building-ness as the building. To the extent that superstructures such as ideology, art or politics are 'relatively autonomous' they follow their own formal cause. Formal cause is from the species or genre or also essence of the class, the form it belongs to. This is also a question of values. Thus we can speak of aesthetic value or filmic value or production values in advertising. We speak of cultural values of specific societies or communities.

In metaphysical capitalism matter will consist not of congealed homogeneous labour but processual heterogeneous life. Matter does not congeal in metaphysical capitalism: it is processual. The atom congeals in its equilibrium, the monad with its trace, and disequilibrium is always in process. Form does more or less congeal, but not matter. Matter is heterogeneous, each monadic bit different to every other. Leibniz of course makes a major distinction between monadic substance and extensive matter. That is, between noumenon and phenomenon. In metaphysical capitalism, as we saw above, this distinction collapses into indifference. The unit of matter becomes not the commodity but the bit of information. These are not the 0s and 1s, but only exist when a difference is made.[12] Information is when one system communicates its state to our system. When our system receives this as a perturbation, it is information. The information comes through structural coupling. It is the history of structural coupling that decides whether this change of state of system B is to be operationalized by system A as information or merely as noise. Only in the first case does the change in state make a difference. Finally, all areas of life – including of course non-human life – in metaphysical capitalism there are generators of such material causation. All areas of life are such sources of information as material process (Fraser et al., 2005).

Formal Cause

There is a surprising 'stickiness' of form even, given the dominance of process in the metaphysical age. In biology, the failures of the human genome project attest to this stickiness. Despite the seeming infinity of genetic mutations, phenotype persists, and phenotypic space is vastly empty. This paucity of phenotypes, in the context of seemingly unlimited genetic information-generating possibilities, attests to the continued power of formal cause, and to the limitations of cause from material structures. So how do we explain this stickiness of phenotype, of form? This is not explicable by teleological cause of natural selection. Niches can change, environments can change radically, but forms persist; species persist for millions of years, and in the context of very many niches. In global geopolitics strong nations persist relatively independent of the environmental niches they inhabit. The point is that causality in the contemporary age is just as much about the preservation of form, including social forms, as about their destruction and mutation. And the problem is perhaps, even more than explaining change, how we can explain continuity or this stickiness.

What can it mean to say that form causes itself? In Aristotle you have more or less timeless forms, genera and species. These are essences that explain the shape of individuals, like the particular birthday cake. In modernity, form is not timeless, yet a form's temporality is in an important sense reversible. The same is assumed in modernist architecture and planning – think of Corbusier. The assumptions are equilibriate. There are parallels here in the notion of reproduction that we have in the structuralist sociology of Bourdieu. In Bourdieu we have equilibriate reproduction of the society and social class. Now, however, we are no longer dealing with timelessness but path dependency (Urry, 2002), with traces and decay. We are dealing with systems at far-from-equlibrium states that nonetheless persist as forms. They maintain their operational closure, that is, their system-ness or form-ness, while being in a disequilibrium state (Varela et al., 1991: 201). They do this through structural coupling with their external and internal environments. Thus in the organism there is such coupling at levels of generic information, protein, cell, tissue, organ, organism (phenotype or form). The organism draws on cellular and molecular protein and gene networks – as we see in immunology – to reconstitute tissue and to fight viruses or bacteria (Bentley and Corne, 2001).

Teleological (First, Final) Cause

Value-substance is the value of congealed homogeneous labour. Value-form, or the commodity, is the immaterial yet physical bodily extension of value-substance. The value-form is the commodity insofar as it consists of exchange-value. It is its physicality that generates the superstructures. But exchange-value, the number of units comprised in a commodity that exchanges on markets is determined by not efficient, or material or formal cause. At stake here is teleological cause. This is not ultimate, but

proximate teleological cause. Thus, in use-value, the cause and value of the commodity lies in the concrete and singular use of it. Marx's use-value *pace* Baudrillard (1983) has nothing to do with utility. In almost all of its discussion in volume 1 of *Capital*, use-value is of singular things. Only in one instance in *Capital* is use-value a question of units of utility, and that is in the use-value of labour-power to the capitalist. This is only metaphorically use-value. It is a question of units of utility to the capitalist. Here Marx says the use-value of labour-power to the capitalist is surplus to what he paid for it on the market, or its exchange-value. This is, of course, the source of surplus-value. The term use-value is misleading in this context. Use-value is the value of concrete utility. It has no measure and cannot be divided into units. In this case the value of labour-power to the capitalist is measurable and consists of units of abstract utility. This indeed is exchange-value. The commodity, insofar as it is determined by its exchange-value, is determined by its purpose. This is teleological cause. This purpose or function is in regard to an environment, which is a market. The purpose is the demand-side of the market, much as the teleological cause of the cake discussed earlier was Joey's birthday – or Joey's happiness on his birthday. The demand-side of the market, which is the purpose, consists of aggregated preference schedules. This is abstract utility.

In *For a Critique of the Political Economy of the Sign* (1983) then, Baudrillard wrongly understands use-value in terms of abstract equivalence. He mistakes use-value for exchange-value. Use-value instead shares with the gift the register of concrete inequivalence. He compounds this in his idea of sign-value, which he calls 'sign-exchange-value'. He understands this in terms of the extensive language of Saussurean semiotics, and in terms of abstract units of linguistic exchange. A number of writers have taken sign-value as a new mode of non-linear value. But value in metaphysical capitalism is in units not of equivalence, but of abstract inequivalence. This might be characterized as say 'difference-value'. It is quantitative, unlike use-value. But it is not extensive like exchange-value. It is instead intensive like number, the derivative, like fractals and attractors. It is topological. Units of information consist of differences. They must make a difference to a receiving system, and each unit is different from every other.

For Aristotle, all of his four types of cause were reasons. That is, a thing's causes – the causes of an individual – were also its reasons. Leibniz's metaphysics understood each individual monad in terms of its sufficient reason. If there were two perfectly identical substances, then there would be any sufficient reason for each to occupy its own location than that of the other. So the full – i.e. all the four causes – cause of the individual is its sufficient reason. Now monads which are eternal, evolve, through their traces in order increasingly to incorporate reason. They never, however, evolve to the point of the absolute, of God, who incorporates not absolute power but absolute reason. God is first and final cause. For Walter Benjamin (1977: 143) man could approach the metaphysical absolute through language: i.e. not extensive semiotic language but intensive Adamic

language. Of contemporaries perhaps Goethe's poetry came closest to this. For Benjamin the other window onto the absolute, the metaphysical, was mathematics. Here implicitly is Leibniz's monad, which is a point of view on the world: on the spatiotemporal relationality of the world. With the becoming of the monad this perceived relationality becomes increasingly rational. The most rational this could be without fully approaching the absolute was the differential calculus (Serres, 1968: 768f.). The *dx*/*dy* relationality, the differential, is as deep as rationality can go in terms of implicating relationality. The differential is quantitative but not metric. It consists of quantitative intensity.

We are moving from proximate to ultimate teleological cause. And here is where final and first cause come together. Indeed, for Marx the deep structure, i.e. the base material cause and first cause come together. The ultimate cause is thus the economy, or congealed abstract labour-time in capitalism. But Marx's first cause is material and physical. We are looking, in an age of information, at an abstract difference for a first cause that is material and metaphysical. We have just alluded to this via Leibniz's differential. This is developed in some depth in Antonio Negri's *Savage Anomaly* (1991), in which the author recasts Spinoza's natural/divine character of single substance as 'materiality'. Such materiality is the deepest structural cause or first cause.[13] Similarly, Leibniz's differential is at the heart of Gilles Deleuze's notion of the virtual, of the 'plane of immanence' in *Difference and Repetition*. For Deleuze, the virtual is difference-in-itself: the virtual is difference's noumenon. Deleuze's virtual generates the actual, metric world we encounter through a process of actualization, which Deleuze (1968: 317) characterizes as differen*c*iation. We arrive at the virtual or the plane of immanence itself through a process of differen*t*iation: a process of virtualization that will bring us towards the plane of immanence. Differen*c*iation is like integration or integral calculus, and differen*t*iation is like the differential calculus. Differen*c*iation is a bit like structural differentiation in the sociology of modernization. In German this is rendered as *Ausdifferenzieurung*. But Deleuze's differen*t*iation is like de-differentiation (*Entdifferenzieurung*): a move towards indifference, implosion, compression. That which actualizes in terms of actual movement of bodies, and which we can graphically draw on *x* and *y* axes, de-differenciates or differentiates to a single point, a non-metric point of instantaneous acceleration. Similarly, a process of differentiation will bring us from the most differenciated or actual level of Euclidean geometry to the non-metric topology or Riemann geometry (DeLanda, 2001). This differen*t*iated plane of immanence is also the space for non-metric fractals or attractors or the vector plane that differen*c*iates out into solids. Finally, as DeLanda points out, the plane of immanence is Deleuze and Guattari's 'body without organs', the de-differentiated and *informe* body which itself differen*c*iates into the actual body with organs.

This originally Spinozan plane of immanence becomes at the same time metaphysical and physical for Deleuze. Deleuze's noumenal

difference-in-itself is also the physical intensity that is central to so much of today's non-linear science and mathematics. For Spinoza, nature/the divine is the generator of all the individuals, of the monads and indeed of the actual. It is at this point that Spinoza's metaphysics approaches Leibniz's. Here is where the single substance of first cause generates the multiplicity of differences, which are the still intensive monads. This is what Deleuze calls the field of individuation, and, before Leibniz began to speak of monads, he called these entities of infinite difference 'individuals'. So first cause is the single substance of the plane of immanence or difference-in-itself. And what it generates is what Deleuze calls 'difference-for-itself', which is the plane of the monads or individuation. For Deleuze further actualization will take us to the extensity of the actual itself.

Deleuze's ontology, his metaphysical materiality, is inspired by and grounded in science (DeLanda, 2001). Negri's (1991) metaphysical materiality, in contrast, is grounded in politics. It thus is a political ontology.[14] Negri calls the single substance of noumenal difference 'materiality'. This is a political and economic materiality. What such materiality generates is singularities, it is monads (Lazzarato, 2002, 2004). The single undifferenciated substance of materiality generates through differenciation the infinity of monads, of singularities. This collective of singularities are Hardt and Negri's political 'multitudes'. Economically they are labour that has already escaped from the factory, working – not as homogeneous atoms but singular monads in a register of invention and producing difference. This neo-Marxist materiality is heterogeneous unlike Marx's homogeneous material. In this neo-Marxism it is not just labour that is producing in a register of inequivalence, it is all the areas of social, natural and machinic life. In this neo-Marxism, the material becomes the metaphysical.

We need to make but one more step. We need only to understand this new metaphysical materiality as informational. We have already introduced information into the equation in the discussion above of formal cause. We understood the disequilibriate preservation of form via structural coupling. Here systems through operations of coupling with other systems brought in information (Spuybroek, 2004). We define information via Bateson as that which makes a difference to the structurally coupling receiving system. Bateson of course famously understood information as a difference that makes a difference. That is, as a noumenal difference that generates phenomenal difference. It is a difference generator.

Bateson's information-in-itself (the difference that makes a difference) is the generator of information-for-itself (the difference that is made). If it does not make a difference it is not information. This is first empirical difference (and empirical information), as it enters form through structural coupling with the environment. It is, second, as it were, transcendental information, as generated from the sort of differen*t*iated matter in the plane of immanence. Indeed, in biological nature and in today's informational capitalism, information is determining system and form from the immediate environment and its deep structures at the same time (A. Mackenzie, 2005; Malik, 2005).

Capitalism Becomes Metaphysical: Money Comes to Life

In Don DeLillo's *Cosmopolis* (2004), Eric Packer is a 28-year-old asset manager in April 2000, the month of the dot.com crash.[15] Eric works in finance, in money. He is speculating during the 24 hours of the novel against the yen. He works in the idiom of finance. Eric, who had read a poem, in which 'a rat becomes the unit of currency', lives in the world of his seamless, hermetically sealed limousine, in a world of finance, of derivatives, in which money becomes a living, breathing, indeed heaving database. Eric lives in an environment of pure abstraction: abstract money, abstract sex, an environment of abstract inequivalents.

> He understood how much it meant to him, the roll and flip of data on a screen. He studied the figural diagrams that brought organic patterns into play, birdwing and clambered shell. It was shallow thinking to maintain that numbers and charts were the cold compression of unruly human energies, every sort of yearning and midnight sweat reduced to lucid units in the financial markets. In fact data itself was soulful and glowing, a dynamic aspect of the life process. This was the eloquence of alphabets and numeric systems, now fully realized in electronic form, in the zero-oneness of the world, the digital imperative that defined every breath of the planet's living billions. Here was the heaven of the biosphere. Our bodies and oceans were here, knowable and whole. (DeLillo, 2004: 24)

What could be more abstract and physical than money? Exchange-value itself is the exchange-value of a commodity – be it a consumer product, labour-power or constant capital. Money is what mediates between exchange-values. If every use-value has an exchange-value, then money is exchange-value's exchange-value; it is instrumental rationality's instrument, hence today's idiom of 'financial instruments' is not misplaced. Productive capital circulates C–M–C′, in which M (money) is exchanged against labour-power and constant capital, and C′ is of greater value than C. Money or financial capital circulates M–M′, without the mediation of anything like C, the commodity. The commodity is two-sided said Marx: on the one side concrete and particular, i.e. use-value, on the other abstract and general, exchange-value. Money, however, is only one-sided; it is never concrete and particular, always universal and abstract. Money is the universal equivalent. For Marx all commodities are particular equivalents of money. That is because all other commodities are use-values too. Money's use-value is its exchange-value or how it functions in exchange. Without money we do not have exchange of equivalents on markets. On markets what happens is not that commodities exchange but money exchanges for exchange-values of particular equivalents. Money exchanges for particular equivalents. Commodity A and commodity B do not exchange places but money and commodity A change places. And commodity A becomes an equivalent because of money. In the absence of money, it is a particular inequivalent, i.e. not a commodity at all. Money converts use-values (as concrete and particular) into exchange-values; it converts monads into atoms; it converts

singularities into commodities. And commodities are at the same time monads and atoms: intensities and extensities. As Leibniz says every monad has a body. Except for money. If money cannot be exchanged, it is a bit like yesterday's papers: without use-value. It is the commodity that is never a singularity. It is arguably the only thing whose in-itself is a for-itself. It would seem the only being whose intensity is extensity. The three classic media are language, money and the media of communications themselves. Language's in-itself, as Walter Benjamin noted, was the religious, the Adamic language of Paradise. That is language's in-itself is the symbol. Its for-itself is signs. Money's in-itself, as we noted, is its for-itself. Its metaphysics is already physics. As for the media: the television or computer screen, its for-itself is its light-through in-itself. The screen, like contemporary capitalism, is already metaphysical.

Yet, in a metaphysical capitalism, in today's immaterial capitalism, money itself is no longer just a medium. It is a product. Banks have turnover, profit, market capitalization. Banking is the largest 'industrial' sector of the *FT*'s (*Financial Times*) Global 500. Sixty-six of the world's largest 500 corporations are banks. Citigroup is the world's fifth largest corporation by market cap ($259 bn).[16] Bank of America is the world's tenth largest corporation; HSBC is eleventh and Morgan Stanley sixteenth. What was a medium – and this is also true in the media sector – has become a thing, a product: an instrument, in the case of money. We have now financial *products*. And firms employ ever more mathematicians to develop an ever-greater diversity of financial products. This is banking's R&D. We have flexible specialization, post-Fordism in banking, in which the labour of design, of R&D of financial products, comes to match the labour of production. This is the case especially for derivatives, as now we come to speak of 'traditional' and 'derivative financial instruments' (D. MacKenzie, 2003). As Lee and LiPuma (2002) note, derivatives are constituted in the idiom of risk. If share prices are a matter of taking bets on the future profitability of a firm, then derivatives, as Linda Davies writes in *Into the Fire* (2000), are a question of taking bets on people taking bets. So the exchange-value of a firm is no longer just the already abstract exchange-value of its assets, of its fixed and circulating constant capital, and the variable capital of its labour force. It is more abstract than exchange-value. The exchange-value of a firm is now the sum of a collection of bets on its future profitability. The exchange-value of a firm has to do more with capital markets than product markets. Yet money is becoming increasingly a product. Derivatives – whether futures or options – are yet more abstract than this. They are bets on the sum of other people's bets or, just as much, hedges – bets placed to minimize risk of people losing from their own bets. More and more, the M–M′ of financial risk markets drives the M–C–M of production. Surely there is risk in productive investment. But M–M′ is pure risk. Derivatives are then attempts to hedge the risk of owning things that are subject to price fluctuations.[17] Investment in derivatives is thus a mode of risk management. Yet they are notoriously susceptible to corruption or financial collapse, for example, the Long Term

Capital Management crash in 1998 and the Barings and Enron scandals. The unintended consequences of managing risks are risk creation, thus fitting perfectly the theories of Ulrich Beck. Moreover, attempts at equilibrium push the chronic disequilibrium of today's intensive capitalism.

Yet this hyper-abstraction of market capitalization and derivatives, one betting on the future and the other betting on (and against) bets on the future – this abstract physical that is even more abstract than the physical, this hyper-extensity of money is at the same time shot through with intensity, with life, with the metaphysical. For DeLillo's Eric, money, in its even further double abstraction as data and digitized on a screen, brings into play the life and intensity of 'organic patterns, birdwing and clambered shell'. This money as screen-data is doubly mediatized, indeed trebly so, as mediated third through the language-exchange of traders (Knorr Cetina and Bruegger, 2002). Yet these 'numbers and charts', DeLillo continues, are not a question of the alienation, the 'cold compression' of man's 'energy' and 'yearning' into the 'dead and spotless financial markets'. Indeed, instead money as screen-data (and here we have the fourth mode of mediation and abstraction, i.e. of mathematical symbols) itself is metaphysical. It is 'soulful' (as monads),[18] and 'glowing' (light-through). Yet this abstract cognitive digital is at the same time noumenal as an 'imperative': 'it is the breath of the billions, the heave of the biosphere'. If the media-screen becomes heaving, biological and live in David Cronenberg's *Videodrome*, money takes on life in DeLillo's *Cosmopolis*.

So capitalism, at its most abstract, much more abstract than the commodity, at its most extensive abstract physical, is at the same time intensive and metaphysical. A doubly abstract risk process of M–M′, once derivative of the concrete production process C–M–C′, is now at centre stage driving the production process. We see this in the place of banks in the *FT* 500: in the hegemony of market capitalization. In the UK, the finance sector in the City of London is the lifeblood of the entire British economy, and the world's (i.e. London) most thriving labour market. The new capitalism is based in sectors not of goods or even of services but of *media*: of media as screen, as money and as language (education, affect sectors), as genetic code in biotechnology. Yet these very media have become products, have become things in an age when capitalism has become metaphysical. Jakob Arnoldi (2004) has likened the financial derivative to the derivative in differential calculus and to the process of differentiation as described above in Deleuze's plane of immanence. Classically, the 'dismal science' dealt with how to steer markets and national economies back to their natural equilibria. Now financial products attempt to carve out islands of equilibrium in what has become a sea of disequilibrium: islands of security in a sea of risk and contingency. To secure these islands in the actual may necessitate a whole new set of non-metric mathematical operations – of transcendental information – in the virtual.

Concluding Thoughts

Max Weber's oeuvre was obsessed with the metaphysical. Weber carried out long studies of the world religions and wrote a detailed *Religionssoziologie* in *Wirtschaft und Gesellschaft*. Weber was obsessed with the genetic question of the origins of capitalist modernity. Weber, concerned with the 'value' origins of 'fact', was looking for the principle of emergence of the historical individual that was capitalism. Weber looked at all the world religions, at the range of the metaphysical cosmologies and asked out of which of these varieties of the metaphysical can the physical be born? That is, which of these varieties of metaphysics contains within it the germ of the physical (see Whimster, 2004)? His answer was Protestantism (Weber, 2001). Inside Christian metaphysics, the ideal interests of ascetic Protestant 'prophets' had, as consequence, the retreat of the sacred and the expansion of the realm of the physical. In this process arise the 'third-person truths' of objective investors and the objective scientists that Robert Merton (2002) wrote about in his work on Protestantism and the rise of modern science. The Reformation was one early modern pillar of the Enlightenment. The other, of course, was the Renaissance. Galileo and Descartes were not Protestants. Thus there is a certain 'Renaissance ethic' at work in Erwin Panofsky's benchmark *Perspective as Symbolic Form* (1997), where again we see the birth of the physical from the metaphysical and the rise of third-person truths.[19]

The *Protestant Ethic* (Weber, 2001) was about the rise of physical capitalism, i.e. Western capitalism. And Western objectivity was conducive to this rise. But when science, and for that matter social science, become metaphysical, the observer is no longer objective. He/she is embedded in the system. We have drawn on the work of Francisco Varela throughout this article to develop this. At stake are observer effects and what Varela calls first-person truths. First-, and not third-, person truths have been from time immemorial, and continue to be, the paradigm of Eastern and South Asian religions, the religions of India and China. In physical capitalism's linear systems, in which cause was external and reproduction was paradigmatic, Western third-person truths were at the heart of capital accumulation. But now in 21st-century capitalism, systems come to self-organize; non-linear systems and embedded observers become increasingly paradigmatic in science, social science and the arts. Could Francis Fukuyama be wrong? Are we moving towards a world dominated not by the equilibrium and equivalences of the neo-liberal market, but one in which exchange of inequivalence and disequilibrium will be selected by the increasingly global environment? In such an age – as economics takes on progressively the colours of metaphysics – will capital first and foremost accumulate in the East?

Notes

1. Various versions of this article were presented at the Universidad Autonoma Metropolitana in Mexico City, at New York University's Media and Communications

Department and at the University of Pittsburgh. An earlier draft has benefited from comments by Jakob Arnoldi and Ino Rossi.

I would like also to thank the *TCS* referees for their criticisms and comments. Two referees suggested alternate titles for the piece. One was 'Capitalism and Immanence'.

This title is consistent with the content of what follows. But with this title it would seem as if the article was limiting itself to an account of a Negrian, and thus Deleuzian, theory of capitalism. There are very many of these accounts and another is not needed. The idea of a sort of 'metaphysical capitalism' in this article does also account for and embrace (as we will see below) the Negrian position. It does so from this particular point of view – featuring abstract inequivalence and self-organization. In this sense it gives a bit of a novel perspective on this immanentist capitalism. But the article, I think, does a lot more than this. The article is suggesting that, through a notion of the metaphysical, we can begin to re-think the theory of capitalism in a way that makes sense in the global information age. So this article is first and foremost an exercise in trying to re-think the theory of capitalism. The article does not make empirical claims per se: it is an article in social theory. But it does have, I suggest, some value for understanding phenomena in contemporary society.

Another, also quite perceptive, referee thought the article should be entitled 'Metaphysical Capitalism'. This would make the article's theoretical claims more modest. But if metaphysics were reduced to 'meta-physical', there would be no thesis to the article at all. The thesis is that the idea of metaphysics – as consistent with a number of classical authors – can help produce a theory of capitalism that is particularly attuned to contemporary social processes. If I used meta-physical it would be like using the word 'immaterial'. Or post-industrial or postmodern. That is, not modern or not industrial or not physical. My concept here is not so much about what today's capitalism is not, but rather more about what it might be.

Finally, the article is advisedly called 'Capitalism and Metaphysics' rather than 'Metaphysical Capitalism'. I don't particularly want to call today's capitalism 'metaphysical capitalism'. I would rather call it something like 'intensive capitalism', as distinct from an earlier primarily 'extensive capitalism'. This said, I do think contemporary capitalism is very importantly metaphysical. And I try to focus on this in the article. To repeat, the article is indeed more about the theory of capitalism rather then making particular empirical claims about, for example, the contemporary economy.

2. In contrast, of course, Leibniz's differential calculus is *metaphysical*. Thinkers such as Walter Benjamin (see Fenves, 2001) and Gilles Deleuze (1988: 131–2) have commented on this.

3. A tradition of Marx's critics, from Raymond Aron, have argued against Marx's distinction of infrastructure and superstructure on the grounds that putatively superstructural scientific knowledge is part of production and hence the base itself. Marx rarely if at all said that science was part of the superstructure. But it is clear – as I argue here – that Marx developed his notion of the economic base on the model of the physical sciences. In most instances Marx understood the superstructure instead as metaphysical. In Marx's dialectic a sort of 'absolute' of the physical (economic) determines the metaphysical. In Hegel it was of course a question of the determinations (*Bestimmungen*) of the absolute, of metaphysics or mind. I am grateful to Ino Rossi for comments on this point.

4. Indeed, in natural selection, the changing physical environment selects from a mutating species. If this is successful in reproduction, i.e. in preserving its germ cells and germ cell line, then a new species emerges. But a large number of other possible species could have met the functional prerequisites for being selected. The assumptions here are of a certain interchangeability of species. Further, the species is not the individual. If the individual is monad the species is atom. The species is primarily extensive and physical. 'Speciesization', or the emergence and origins of species, is different from individuation. If the species is primarily physical, the *individual* – we will see – is primarily metaphysical.

In classical sociology, physicality is often more Darwinian than Newtonian. Here we have positivism in sociology, i.e. on the model of the physical, standing in contrast to the *Geisteswissenschaften*, the metaphysicality of the arts and humanities, the mind-sciences. And classical, functionalist sociology has distinguished between social norms, on the one hand, and cultural values. Here we have the physicality of norms, which are indeed determinate rules that govern action through bringing particulars under universals. Then there were cultural values, connected to things like language and literature (in a canon), and above all religion, that themselves are functional prerequisites for the reproduction of society and social norms. Cultural values more interestingly had to do not with the 'somatic' of the social body, but with the equivalent of germ cells, passed from generation to generation. Where norms are abstract and general and public, the germ cells that are values are passed on in private through, not the abstract and general, but the concrete and particular of the family and intimate relations. Yet there is again the primacy of the social or the physical.

5. Very many authors have spoken of contemporary capitalism in terms of post-industrial, informational, immaterial, cognitive and postmodern prefixes. It is beyond the scope of this article to argue that metaphysical is a better notion than any of the above. The article just wants to make the case that the nature of contemporary capitalism, especially in regard to causation, value, etc., is in important respects metaphysical.

6. For Henri Bergson such time was spatial. Extensity is first understood as spatial extension. Hence it is metric.

7. Here I am drawing on Marshall McLuhan's (2001) ideas of light-on and light-through media. For McLuhan light-through media were in a very important sense metaphysical.

8. The in-itself as a singular ontological structure differs widely from Aristotelian essence. Essence is at the root of formal cause. Aristotle uses essence and genus (or species) interchangeably in terms of that which causes the individual. This is not so far from the Platonic idea. It is what contemporary human sciences understand as essentialism. But when the in-itself is monadological then every in-itself differs from every other. Even if phenomena are identical, their noumena differ.

9. Here the brand is a virtual, the substance that generates a whole series of forms (Lury, 2004).

10. Spinoza made the distinction between the two senses of power: *potentia* versus *potesta*, in French *pusissance* versus *pouvoir*.

11. One *TCS* referee commented that this article should not take as an assumption the validity of the labour theory of value, noting that labour was a rather poor predictor of how the value of goods was determined in earlier capitalism. This

referee is referring to how wages of labour enter into the price of goods. This is true. But in this article I was looking at the labour theory of value not so much in terms of the prices of goods but in terms of the general theory of capitalism. I think the labour theory of value does some things well, other things not so well. But it is a, indeed *the*, cornerstone of the most thorough and comprehensive general theory of capitalism. Also I am using it with a particular end in mind here. I am looking at its central dimension of abstract equivalence in order to think about what metaphysical capitalism's abstract inequivalence might be.

12. Indeed there is no reason why the 0/1 binary will stay at the centre of digitization.

13. Deleuze keeps Spinoza's naturalism, losing the divine. Yet Deleuze and Negri retain Spinoza's metaphysics. Their notions of nature are metaphysical.

14. This article is in broad agreement with Negrian Neo-Marxism.

15. There is of course now a considerable literature on financial markets. The relatively recent and very significant re-birth of economic sociology has especially focused on finance. Here at centre stage has been Michel Callon's (1998) theory of performativity. It is difficult to include Callon when elaborating a theory of capitalism in the light of his recent statements that the only people who use the word 'capitalism' are Marxists. I am not sure about this. *The Economist* and the *Financial Times* speak regularly of capitalism for example. Callon – and the large number of significant analysts influenced by his work – is especially attentive to the performativity of the theories of economists in the empirical economy. The position outlined in this article would tend to be consistent with Callon's notions, in the sense that the ideational superstructures increasingly permeate the economic base. And in this sense the latter is becoming increasingly 'metaphysical'. Callon's theory – now really the dominant paradigm in economic sociology – has been an inspiration to a considerable amount of very fruitful research, especially on financial markets. I do not want to contest this – though I do think the Callonian position does overestimate the influence of economists on the economy – as distinct from the learning by doing of a host of economic agents. Therefore I would be inclined more to go along with the more on-the-ground constructionism of Harrison White (1992), or quasi-Durkheimian ideas of embedding. The present article would tend to lead us to look at a different set of research questions. Such questions would ask: to what extent, and how, has money taken on a logic of inequivalence? This is a question that could be asked both culturally and economically. To the extent that money is no longer, perhaps, just dead labour, but itself a generator of disequilibria and a force of production itself, it seems to take on more a logic of inequivalence.

Finally, this article is in general agreement with books like Thrift's seminal *Knowing Capitalism* (2004). The ideas in this article, of intensity, inequivalence and metaphysics, would be very consonant with the theory of cognitive capitalism in Thrift and also in Lazzarato. But whereas Thrift works the borders of theory and the empirical, this article works on the border between sociology and philosophy and in doing so, it is hoped, helps to generate some insights into contemporary capitalist processes.

16. No.1 is General Electric at $299bn.

17. Derivatives divide into futures and options. Modern futures markets were originated at the Chicago Board of Trade in the mid 19th century, trading wheat,

pork-belly and copper futures. From the 1970s, currency futures have played an important role. To own a future is to contract for future delivery at a specified price.

18. Even animal monads are souls for Leibniz (1991).

19. Pierre Bourdieu translated this seminal work from the 1924 German original. Its play on the symbolic and the physical and factual had a seminal influence on Bourdieu's ideas of symbolic capital and cultural capital.

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