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The human capital strategy*

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abstract

This paper traces the emergence of what I call the "human capital strategy", a tool developed by neo-liberal economists that understands the "acquired useful abilities" of an individual or a society as a form of fixed capital. Particularly, the essay explores the development of the concept of human capital as a system that measures the value of education in order to produce a zone for financial speculation in human knowledge as capital, arguing that this process is in line with Marx's theorization of the transfer of the productive capacities of society to fixed capital in the *Grundrisse*. It seeks to understand the role of higher education in the development and dissemination of human capital, while addressing debates around the problem of "cognitive labour" in higher education and its centrality in contemporary capitalism. Looking at the recent anxieties over the "bursting of the higher education bubble", it argues that the recent financial crisis indicates the volatility of the human capital strategy.

> It may seem odd now, but I hesitated a while before deciding to call my book *Human Capital* […]. In the early days many people were criticizing this term and the underlying analysis because they believed that it treated people **like slaves or machines**. My, how things have changed!
>
> Gary S. Becker, 1989 (2004: 16, my emphasis)

In their recent essay in the *Commoner,* "Notes on the Edu-Factory and Cognitive Capitalism", Silvia Federici and George Caffentzis offer an important intervention into recent discussions of "cognitive capitalism", especially those centred on a critique of the university. Federici and Caffentzis direct their essay at a growing body of scholarship and activism around the contemporary university and its central role in the production of value in post-fordism. Many of these discussions insist that the university is the new nodal point of exploitation in contemporary capitalism. "As once was the factory, so now is the university", reads the Edu-Factory website, exemplifying the thesis of this vein of critical university studies that sees the university as the locus of new forms of exploitation: those targeted at immaterial, cognitive, and affective labours that form the basis of the new knowledge economy.

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While Federici and Caffentzis are sympathetic to these analyses, they warn that the over-valuation of cognitive labour and its products by the left might insidiously reproduce hierarchies already at work within capital's strategy of dividing different sectors of the workforce and, in turn, limit our analysis of and struggle against diverse modes of exploitation in our contemporary moment. Thus, they argue against putting the university and the forms of labour that it exploits at the centre of a critique of our contemporary moment. It is with this admonition in mind that I offer the following contribution to the ongoing discussion of the university and its place in contemporary capitalism. When approaching the question of the university, my intention is to sidestep the debates around immaterial labour, while, at the same time, noting their importance. Rather than focusing on either forms of cognitive labour or the knowledge-commodities that they produce, I will examine the birth of technologies of measure developed by financial capitalism since the mid-twentieth century that, while having the university at their centre, mark a fundamental shift in larger circuits of exploitation. Namely, I would like to begin to trace the dissemination of the concept of *human capital* in mid-twentieth century economic thought as a way of characterizing a fundamental transformation in methods of valuation and measure of human life by capital, both inside and outside of the university.

"like machines": Measuring Human Capital

In the late 1950s, American economists made and odd sort of discovery. In an attempt to understand income distribution among a given population, economist Jacob Mincer fortuitously stumbled upon a form of capital that had hitherto been overlooked: *human capital*. Neo-liberal economists treated Mincer's discovery of human capital – the valuation of the knowledge, skills, and health of an individual as a form of fixed capital – as a kind of purloined letter of capitalist accumulation. For mid-century economists, human capital presented a method radically revaluing both life and capital that had been surprisingly overlooked. In properly neo-liberal fashion, Mincer revived the concept of human capital from the depths of Adam Smith's *Wealth of Nations*. Smith defines four aspects of fixed capital: machines, buildings, improvements on land, and human capital. In Smith's schematic, human capital is "the acquired and useful abilities of all the inhabitant or members of a society […]. The improved dexterity of workmen may be considered in the same light as a machine or instrument of trade which facilitates and abridges labour, and which, though it costs a certain expense, repays the expense with profit" (Smith, 1963: 214).

The re-discovery of human capital in the mid-twentieth century, of course, was not a discovery at all, but rather the invention of a technology through which to measure, in a seemingly novel manner, the productive capacity of a human being and of a population. The novel aspect of the invention of human capital is not merely that it measures the capacity of human labour, but it does so in a manner that, as mentioned earlier, draws upon an economic framework modelled on the valuation of fixed capital. In essence, the technology of human capital produces its object, human ability conceived of as a fixed form of capital, in order to measure it. As it is defined in a recent study of human capital in the United States:

> The value of the human capital stock is analogous to the value of the nation's physical capital stock. Indeed, in valuing the stock of physical capital (i.e. the nation's factories, machines, and equipment), the analyst calculates today's value of the stream of potential outputs attributable to this physical capital stock over its lifetime. This "asset value" reflects what this capital stock would fetch on a market if it were sold. (Haveman et al., 2003: 2)

Investment in human capital, then, is analogous to an investment in physical stock, the means of production. It is the calculation of the returns on this investment that interests economists who study human capital. One of the first to systematically calculate the value of human capital, Gary S. Becker presented a basic mechanism for measuring the value embodied in human capital in his seminal work *Human Capital: A Theoretical and Empirical Analysis, with Special Emphasis on Education* (1964/2004). The fundamental equation for Becker's analysis of the human capital of an individual is as follows:

$$HC = E = X + \sum_{j=1}^{m} (r_j \times C_j) + u$$

> where E is the present value of the person's future expected earnings, X is the present value of the stream of returns on the individual's basic abilities, C_j is the amount spent by the person on the *j*th investment in human capital (out of all the *m* investments), r_j is the present value of the annual return on that investment, and *u* is the present value for the stream of "luck" and other factors. (Haveman et al., 2003: 62)

Equations that quantify the value of human capital like Becker's import a chilling significance to clichés that circulate in popular discourse such as "investing in higher education". Such equations demonstrate the force of measure deployed to calculate the value of capital embodied within an individual that results from the "investment" in human capital stock. An equation that perfectly calculated the value of human capital would be able to measure the value of all layers of socialization, which occur over the span of an individual life, that add to productive capacity, including such immeasureables as "'luck' and other factors". Human capital calculations start with a conception of human productivity in its raw state, a pre-individual, or "*Gattungswesen*", to which all value added could, potentially, be calculated as human capital. However, this investment in human capital stock is different from other forms of capital investment in fixed stock in that, as Becker himself puts it, "you cannot separate a person from his knowledge, skills, health, or values the way it is possible to move financial and physical assets while the owner stays put" (Becker, 2004: 16). Human capital is an embodied, measurable form of fixed capital understood as knowledge, skills, etc. Human capital conceives of the means of production as internalized in the very body of the worker and understands these abilities to be a zone for speculative investment.

An analysis of the development and dissemination of human capital as a financial technology expands the discussion of cognitive capitalism and the role of education in it by concretely illustrating the tendency or capital to continually transfer the labouring capacities of society into fixed capital. It is perhaps useful to return to Marx's famous passages on machinery in the *Grundrisse* in order to understand the process by which productive forces are transferred to the machine:

> The development of the means of labor into machinery is not an accidental moment in capital, but is rather a reshaping of the traditional, inherited means of labor into a form adequate to capital. The accumulation of knowledge and skill, of the general productive forces of the social brain, is thus absorbed into capital, as opposed to labor, and hence appears as an attribute of capital, and more specifically *fixed capital*, in so far as it enters into the means of production proper […]. The productive force of society is measured in *fixed capital*, exists there in its objective form; and, inversely, the productive force of capital grows with this general progress, which capital appropriates free of charge. (Marx, 1993: 694)

Human capital thus provides both a name and an instrument for the aspect of this process that pertains to education. It is a name for the measure of productive capacity contained within both an individual and a population, and it attempts to measure this capacity in order to transmit its productive capacity into a form analogous to fixed capital. It is the productive capacity of the human *conceived as capital itself* and is utilized to measure this capacity. It is from this perspective that statements made by analysts of human capital such as "the value of the human capital stock is analogous to value of the nation's physical capital stock" begin to make sense. We must read these statements in the context of the innovations in the valuation of life by financial capitalism that we have witnessed in the past several decades. These innovations are expressive of the tendency towards the real subsumption of life into capital. In contrast to Marx's conceptualization of the solidification of knowledge into the productive capacities of the machines as "alien, external to him [the worker]", Becker points out that human capital is an objectified form of capital that exists internal to the worker and cannot be separated from her physical body (Marx, 1993: 695). Human capital is, literally, *embodied* capital.

While Paolo Virno argues that "in Post-Fordism, the general intellect does not coincide with fixed capital, but manifests itself principally as a linguistic reiteration of living labor", it seems that the theorization of human capital problematizes this thesis (Virno, 2004: 106). The neo-liberal theory of human capital conceives of the capacities of living labour as a product of the means, the fixed capital, by which labour's productive capacities are generated, be they linguistic or otherwise. These means are inscribed, however, into the very biological tissue of the subject as a fixed form of their education and training. We might think of human capital as the "score" that Virno's virtuosic subject follows, but this embodied knowledge is conceived of not as living labour, but as the fixed mechanism through which the productive capacity of the worker is generated.

Human capital is a biopolitical measure not only because it involves the utilization of the workers cognitive capacities as a form of "immaterial labour", in the manner in which Maurizio Lazaretto and many others have discussed; more importantly, it is biopolitical in the sense that it attempts to both measure and manage these very capacities as they are made manifest within and across a given population. As Michel Foucault notes while introducing the concept of biopolitics in his lectures at the *Collège de France*, biopolitics is a technology of power developed at the end of the eighteenth century that operates, unlike discipline, specifically at the level of "the population":

> The mechanisms introduced by biopolitics include forecasts, statistical estimates, and overall measures. And their purpose is not to modify any given phenomena as such, or to modify a given

> individual, but, essentially, to intervene at the level at which these general phenomena are determined, to intervene at the level of their generality (Foucault, 2003: 246).

The mechanisms of biopolitics that Foucault identifies, which are disseminated to control "the population", are those that measure the physical health of this constructed entity as indicated in birth and mortality rates as well as other statistical measures. What is interesting about Mincer's introduction of the concept of human capital into economic discourse is that it occurs in the context of a study on the general economic health across the population. Mincer's article, "Investment in Human Capital and Personal Income Distribution", as mention earlier, is a study of the wage differentials that take place on the scale of the general population *as such*. Therefore, since its inception, the concept of human capital has been deployed to measure phenomena at the level of the population by analyzing differentials among groups and supplying "forecasts, statistical estimates, and overall measures" regarding the "stock" of human capital within the population. If, as Foucault argues, biopolitical techniques were originally developed to control the physical health of the population, then in the twentieth century, these biopolitical mechanisms increasingly work to measure the *economic* vitality of the population—its productive capacity congealed into a collective stock. Human capital has become the hegemonic concept for the measure of the productive capacities of a population. The concept has been disseminated to measure populations of workers at the centres of capitalist accumulation as well as been used by international institutions, such as the IMF and United Nations, to measure development in diverse geopolitical contexts. We can see that this form of applied measure, deployed specifically at the level of the population, is already intimated in Smith's definition of human capital as the "acquired and useful abilities of all the inhabitants or members of a society".

Foucault explicitly examines the introduction of human capital into neo-liberal discourse in his lectures at the *Collège de France* in 1979 as that which transforms the classical function of labour and *homo œconomicus* into an "entrepreneur of himself" (Foucault, 2008: 226). Though he does not relate the emergence of the technology of human capital and biopolitics to the regulation of the population as I have described above, Foucault concurs that human capital redefines the category of the worker into an "ability-machine", a category that is separate from labour power as such. Furthermore, Foucault describes human capital in terms of Marx's understanding of fixed capital as that which is consumed in the process of production and is defined not by an income, but rather an "earnings stream" generated from the "ability-machine":

> An earnings stream is not an income, precisely because the machine is constituted by the worker's ability is not, as it were, sold from time to time on the labour market against a certain wage. In reality this machine has a lifespan, a length of time in which it can be used, an obsolescence, and ageing. So that we should think of the machine constituted by, if you like, ability and worker and individuality bound together, as being remunerated over a period of time by a series of wages […] (Foucault, 2008: 225)

The claim Foucault begins to make in this passage, and the claim that I am making here, is that human capital challenges traditional Marxist categories of labour by collapsing the distinction between fixed and variable capital. More importantly, it is the actual lifespan of the worker, conceived of as a machine, whose value is consumed in the process of production. The "acquired and useful abilities" of the worker are absorbed into the process of production, and the consumption of the body of the "ability-machine" by capital directly corresponds to the lifespan of the human individual.

"like slaves": Investing in Human Capital

For theorists of human capital, the study of systems of education became important primarily because they represent the channels of capital investment through which human capital is acquired. As economist Milton Friedman writes in his 1952 essay, "The Role of the Government in Education", a human capital investment is "a form of investment in human capital precisely analogous to investment in machinery, buildings, or other forms of non human capital. Its function is to raise the economic productivity of the human being" (Friedman, 2002: 94). Friedman argues that the lack of opportunities for investment in human capital at his time was expressive of an inherent "deficiency" in capital markets. With regard to government investment in education, he thus argues "the desideratum is not to redistribute income but to make capital available at comparable terms for human and physical investment" (Friedman, 2002: 99). In fact, he writes that any "income redistribution" in the form of taxpayer funding for higher education would be "perverse" (Friedman, 2002: 99).

It is important to note that the production of theoretical literature on human capital has had real effects. Friedman's essay on education has profoundly influenced right-wing education policy. His theorization of the role of education in the accumulation of human capital illustrates that, although human capital was initially introduced to measure the value of acquired ability, this is only one step towards creating actual markets for the trade in human capital. In other words, Friedman is not only interested in *measure of* human capital, but also, more importantly, *investment in* human capital. Friedman's theory transforms education into a vehicle for this investment, the area where new channels that facilitate the flow of money are to be opened in order "to make capital available for investment in human beings on terms comparable to those in which it is available for physical investment". Friedman's theory conceives of education as the central industry through which new markets in human capital investments are to be developed.

Though I do not intend to trace a genealogy of the dissemination of the technology of human capital in higher education within the past half-century, I would like to point to a concrete example of the manner in which human capital is beginning to be utilized in the process of the financialization of higher education. One of the most disquieting areas in which the expansion of human capital markets is already taking place is in the realm of financing college education. These mechanisms of financial speculation are called Human Capital Contracts, and they facilitate the funding of a student's education by a private investor as an investment in fixed capital. Also referred to as increasing "equity", the returns that the investor receives come from a pre-determined percentage of the student's income for a large portion of her working life.[1] Markets in human

1 I discuss the Human Capital Contracts at length in a recent essay (Adamson, 2009). In this piece, I theorize the relationship between financial markets and mechanisms of primitive accumulation at work within the expansion of human capital markets in higher education.

capital already exist in many countries, and the prototypical forms of these investments often carry euphemizing names such as "income-contingent loans". However,

> [i]t is important to note that the Human Capital Contract is not a loan, though it might masquerade as one. It is a legal contract of a different kind as it signifies the ownership not of a debt but of a portion of the actual "human capital," the knowledge and skills acquired through education, possessed by the student. (Adamson, 2009: 103-4)

By directly investing in a student's human capital, the investor thus possesses legal rights over the capital gained through the student's participation in higher education, which is then embodied in the worker. As noted earlier, one's human capital can in no way be separated from her physical person. Thus, the Human Capital Contract amounts, by any measure, to a form of indentured servitude.

Unlike claims that global capitalism has already achieved a fully formed knowledge-based economy, it seems that technologies for measuring, investing in, and ultimately controlling human capital are merely in their nascent stages. The process of enveloping the "acquired useful abilities" of a population into the fold of capital is a process that is nowhere near completion as indicated by the fact in that markets for the trade in human capital are still only beginning to develop. In his recent book, *Investing in Human Capital*, Miguel Palacios Lleras treats the creation of a global market for the trade in human capital investments as the long-term goal of current trends in education policy:

> A global market where the value of Human Capital can be traded, in different forms, either directly or through derivative securities, is the ultimate development that can enable capital to flow wherever there is an opportunity to liberate value by investing in education. That should be the aim of education policy makers around the globe. More than fifty years after Friedman proposed the original idea [investing in Human Capital], the challenge now is whether entrepreneurs and politicians are willing to use the available technology and the financial innovations that have taken place during that period to serve those who want to invest in education. (Palcios Lleras, 2004: 162)

In this passage, Lleras illustrates something that I believe has not been adequately addressed in recent discussions of "cognitive" or "knowledge" capitalism and its relationship to education.[2] As he argues, it is not merely the *products* of intellectual labour that are to be traded; rather, it is private rights to the actual "acquired useful abilities" of the population that constitute the commodity of human capital markets. Emerging markets in human capital are symptomatic of a tendency towards forms of exploitation of human life that are both innovative and anachronistic, in that they deploy long-standing forms of exploitation through new financial technologies. At the centre of discussions in new methods to "liberate value" from human life, education and the technologies of financial capitalism put in place to control it are increasingly relevant to critiques of the present.

From this perspective, I would like to offer a rejoinder to a critical question posed to recent discourse on the centrality of "cognitive capitalism" by Federici and Caffentzis:

2 Some of the most important debates around education and cognitive capitalism have originated from the Edu-Factory list-serve, and are now a part of an edited volume entitled *Towards a Global Autonomous University* (Edu-Factory Collective, 2009). See the review in this issue.

> Again, why at the peak of an era of "cognitive capitalism" do we witness an expansion of labor in slave-like conditions, at the lowest-level of technological know-how […]? Can we say that workers in these conditions are "cognitive workers"? Are they and their struggles irrelevant to and/or outside the circuit of capitalist accumulation? Why has wage labor, once considered to be the defining form of capitalist work, still not been extended to the majority of workers in capitalist society? (Federici and Caffentzis, 2007: 73-4)

These questions are well formulated and offer an important challenge to present claims to the centrality of education and educational institutions in contemporary struggles against capital. Federici and Caffentzis question how it is that linkages can be made between struggles around education and other forms of struggle in a manner that does not privilege one form of labour or product over another. In his follow up to Federici and Caffentzis' essay, Massimo de Angelis goes even further to claim that "'cognitive labour' is an idealized common because it is neither what is common across the hierarchy, nor what tends to be common" (De Angelis, 2007: 74). Though I tend to agree with these claims, I think there are important connections that can still be made between the enclosures taking place within the field of education and the struggles of other forms of exploitation, both waged and unwaged. Furthermore, it is imperative to observe linkages between these struggles because financial capitalism does not rely on the wage relation alone for the expropriation of surplus value. The close ties between finance, mechanisms of primitive accumulation, and diverse forms of expropriation and servitude are evident within many sectors of the contemporary global economy – including, but in no way limited to, education. Divisions between waged and unwaged, skilled and unskilled labour, I believe, need not be drawn when emphasizing the importance of struggles around education.

As I have attempted to illustrate in my discussion of human capital, what is at stake in education is not only the struggle over cognitive labour and its products, but also, the reconfiguration of human life by new technologies of financial exploitation. In fact, if the global trade in human capital was to be realized as Lleras and others conceive it, the expropriation of value from education in the form of human capital might come to exist almost entirely outside of the wage relation. Federici and Caffentzis are correct to warn against definitions of the contemporary moment that reproduce hierarchies within global labour struggles. However, we also need to recognize that structurally similar mechanisms of what David Harvey calls "accumulation by dispossession", that is, techniques of primitive accumulation wielded by financial capitalism, have also been increasingly evident in radical neo-liberal restructuring of many sectors of the economy. The financialization of the education sector must be understood within the context of the general revaluing of human life that has been precipitated by the ballooning of the financial sector in the last several decades. What I call the "human capital strategy", that is, the sum technologies deployed for investing in human life conceived of as an "ability-machine", is expressive of some of the most innovative tendencies of financial capitalism.

"Bursting of the Higher Education Bubble": Human Capital and the Crisis of Measure

In May 2009, the *Chronicle of Higher Education* published an article that set off a wave of anxiety in markets still reeling from the credit crisis and the aftermath of the sub-prime mortgage fallout. The infamous article, "Will Higher Education Be the Next Bubble to Burst?", suggested that the inflated price of higher education in America is the result of the over-valuation of its product, creating a speculative "bubble". One example cited in this article is the exorbitant increases in the cost of higher education: "over the past 25 years, average college tuition and fees have risen by 440 percent – more than four times the rate of inflation and almost twice the rate of medical care" (Cornin and Horton, 2009: 56). The article, interestingly, draws many parallels between the inflated value of higher education and the speculative inflation of real estate prices that led to the market collapse. Cornin and Horton go on to argue that "consumers who have questioned whether it was worth spending $1,000 a square foot for a home are now asking whether it was worth spending $1,000 a week to send their kids to college" (56). Further, the authors insinuate that the bursting of the higher education bubble will be precipitated by a general loss of faith in the value of a college degree, arguing that "there is a growing sense among the public that higher education might be overpriced and under-delivering" (56).

The numerous articles in economic journals and the popular press written in the wake of the op-ed seemed to concur with its overarching thesis: higher education has been over-valued, and the industry is due for a general contraction. As one columnist puts it, "from an economic point of view, in other words, a college degree costs more and more and returns less and less. Kind of like the hot stock with a price-to-earnings ratio of 32, it's a prelude to a crash" (Frum, 2009). What is notable about these articles is that the human capital model has become the pervasive framework for valuing education within both popular discourse and the financial sector. The discourse of investment in education conceives of it, like human capital, to be a capital investment aimed at building equity over time, much like an investment in real estate or financial stock. That one could conceive of a college degree as a "hot stock" or a speculative real estate investment insinuates the extent to which the human capital strategy has financialized education and the knowledge gained from it.

In 1989, when addressing the Chicago School of Economics, Gary Becker celebrates the fact that human capital is no longer on the margins of economic thought, as it was in 1964 when he first addressed the topic. "*My, how things have changed!*" Becker notes with pleasure when discussing the utter ubiquity of the concept of human capital only a quarter century after its controversial beginning. However, what had changed in this short period is not only the ability of policy makers and economists to accept such a concept, but also the environment in which such a concept might gain utility. As Marx notes in *Capital, Volume One*, in times of market instability, speculators are drawn to fixed capital investments (Marx, 1977: 318). Given this observation, it seems appropriate that since the rapid financialization of capital markets since the 1970s, an economic technology that values human life as a form of fixed capital would emerge. It is within this context that human capital, conceived of as the basic means of production embodied within the worker, could become the hegemonic instrument for assessing value from education and training, as both a technology of measure and a new zone for speculative investment. In recent years, human capital speculators have come to completely transform the discourse around "human resources". One of the exemplary instances of this transformation has been engineered by the Human Capital Institute, an institute that specializes in the research of "talent management technologies" such as "Talent Maturity Models" and "International Human Capital Surveys", as well as executive education in methods of "harvesting" human capital. The Chairman of the Human Capital Institute, Michael Foster, argues that human capital technologies are replacing traditional human resources methods for managing a workforce:

> According to Foster, traditional human resource models view employees as a cost that should be acquired at the lowest compensation and with the lowest risk for the company. In contrast, human capital professionals view employees as an investment that will grow and produce a greater ROI for the company over time. Foster continues to define human capital as the skills, talents and aptitudes that people own and bring to the organization. These employees may differ from traditional employees and may bring greater risk for the company. However, the human capitalist looks to diversify the employee risk and grow the portfolio, much like a stockbroker. (Rice, n.d.)

I include this lengthy citation merely to illustrate the extent to which human capital strategists conceive of human capital as an entirely new model of the management of labour, conceived in terms of the logic of financial investment and risk management. Deeply intertwined with notions of "talent" and "innovation" reminiscent of Joseph Schumpeter's theory of entrepreneurship, human capital management technologies have come to dominate the human resources management literature in the past decade or so. The manner in which the author above narrates the transition from human resources technologies to human capital technologies illustrates the extent to which the logic of financial speculation has infected the discourse of labour management. Not only do human capital technologies introduce new mechanisms of evaluation, measure, and exploitation of living labour, they point at a reconfiguration of the basic relationship between capital and labour. As the author notes above, human resources technologies manage labour from the perspective of control over a wage, ones that "view employees as a cost that should be acquired at the lowest compensation and with the lowest risk for the company" (Rice, n.d.). Alternately, human capital management strategies literally see labour as a form of stock, and seek to control the human capital stock held by the company through the techniques of risk-management drawn from the financial industry. Moreover, the logic of risk-management and speculation on the value of human capital has made its way into popular discourse on education, understanding it to be the primary means by which human capital is accrued.

In their recent article "'Cognitive Capitalism' and the Rat Race: How Capital Measures Immaterial Labour in British Universities", Massimo De Angelis and David Harvie make an important contribution to the discourse on cognitive capitalism in the university by arguing against Hardt and Negri's claim that immaterial labour simply exceeds capitalist measure. They insist capital has developed numerous managerial strategies, rooted in the legacy of Taylorism developed to control industrial labour, to measure immaterial labour, and that these strategies of measure are already at work within the university. De Angelis and Harvie illustrate that the measure of immaterial labour takes place in the university through techniques of "quantification, standardization, and surveillance", and that, "capital – via its army of economists, statisticians, management-scientists and so forth – struggles to measure immaterial 'outputs' in its own terms (profit efficiency, competitiveness and so on)" (De Angelis and Harvie, 2009: 10, 27). It seems that one could read recent student and faculty uprisings around the world, particularly those that have been directed against the Bologna Process in the EU, as struggles directed against the regime of "quantification, standardization, and surveillance" imposed by capital on cognitive labour within the university. They are a part of what De Angelis and Harvie describe as the "war over measure", which "continues at the point of immaterial, self-organized and cooperative production" (De Angelis and Harvie, 2009: 3).

While the particular strategies of measure directed at cognitive labour and its products present important points of resistance against an overall regime of measure within the university, I think that the problem of human capital indicates the possibility of an even more fundamental crisis of measure within contemporary capitalism. Within the context of the global financial collapse, we must take the bursting of the "higher education bubble" as a symptom of a crisis not merely in the value of human capital, but also as a crisis in the ability to *measure* this value. As Marx, Negri, and others have argued, the transfer of the capacities of labour to the machines is always in response to the demands of the workers and the process of recovery from crisis. What I would call the "human capital strategy", the transfer of "acquired useful abilities" to fixed capital stock, is being deployed as a method of controlling an increasingly socialized work force. The human capital strategy is, ultimately, the levelling of measure against life in the sense that Massimo De Angelis discusses in his piece "Measure, Excess and Translation: Some Notes on Cognitive Capitalism":

> […] this "inner logic" of capitalism is predicated on a way of measuring life activity which subordinates concrete specific humans to the quantitative imperative of balance sheets, a process of giving meaning to action, of acting on this meaning, and shaping organizational forms suitable for this action that produces what capital values the most: its own self-preservation as capital […] (De Angelis, 2007: 73)

The volatility of markets in higher education is symptomatic of a fissure in capital's ability to measure the value of the "the acquired and useful abilities" of the population as capital. The "bursting of the higher education bubble" potentially indicates a crisis of the tools of finance to speculate on, securitize, invest in, and ultimately to control human capital as such. This is certainly not to say that human capital will cease to develop as a technology of measure; I believe that capital is only at the beginning of exploring the utility of this concept. It merely points to the limits of its capacity to measure in a moment of crisis.

Measure is, simply put, capital's only ability to level technologies of quantification against that which cannot be quantified. Cesare Casarino's reading of Marx's discussion of limits in the *Grundrisse* in his essay "Surplus Common" provides a succinct and important characterization of this process of measure:

> When Marx writes in *Capital* that the movement of capital is limitless and infinite, he means this in the specific sense that capital is the constant movement to create more of the same. Marx's point here is that the "qualitative boundary" – far from being a mere "natural barrier," or, as he calls it in a footnote to this passage, "an accident" – constitutes rather the insurmountable structural limit of capital. In capital, Marx discovers repetition without difference: capital is

> infinite repetition of the same whose structural limit is precisely qualitative difference. […] Capital strives for surplus – namely for the infinite, for the synchronic – yet can constitute it only in finite, quantifiable, and diachronic terms. (Casarino, in Casarino and Negri, 2008: 31)

Following from the concept of the "insurmountable structural limit" to capital as a limit between two qualitatively opposed forms, we can begin to understand the problem of measure as it relates to human capital. While technologies for measuring human capital proliferate, measuring the "useful acquired abilities" of a population is ultimately impossible because these acquired abilities are both synchronic and infinite. Human capital is a strategy that attempts to measure the composition of the *social individual*, an excessive plurality, composed of an infinity of factors that will always, ultimately, escape measure. The recent crisis of measure that the "bursting of the higher education bubble" implies, perhaps, exposes the ultimate unfeasibility of the human capital strategy.

Postscript: Human Capital and Servitude

As I have tried to indicate up to this point, the human capital strategy challenges traditional analyses of the management of labour by capital by putting into question the relative centrality of waged labour in contemporary networks of exploitation. Instead, with the human capital strategy, we see the emergence of a financial technology that is both old and new. The objections that human capital treats humans "like slaves or machines" that Gary Becker so glibly dismisses should not be ignored, as they index a violence inscribed into the balance sheets that calculate human capital. As Ian Baucom argues in *Specters of the Atlantic: Finance Capital, Slavery and the Philosophy of History*, the trans-Atlantic slave trade was the condition of possibility for the modern system of finance, and that the terror of its origins is very much alive in our present. Through a close reading of the ledgers of the slave trade that gave birth to new systems of credit, insurance, and speculation in the eighteenth century, Baucom reveals the historical violence underlying modern systems of financial measure. Arguing against economic historians that understand the slave trade to be an anachronism in the historical process of capitalist accumulation, Baucom shows slavery to be intimately tied to our present through its formation of contemporary financial markets. We might see the human capital strategy, then, as a re-emergence of the violence of finance in a transmuted form, one that again seeks to invest in and speculate on the value of human life conceived of as an "ability-machine". The insidious banality of the financial measures deployed to assess the human capital of a population mask a dangerous tendency within contemporary finance capital to reproduce some structural elements of the relations of servitude, but in a manner that obfuscates these very relations.

In *Wealth of Nations*, in the chapter entitled "Wages of Labour", Adam Smith draws out an extended comparison on the costs and benefits of free labour in contrast to slave labour – from the perspective of the capitalist, of course. He makes an observation that I do not think is noted often enough for its insight into the very functioning of biopolitics. Smith observes the simple fact that the free worker in Great Britain is subject to the fluctuations in seasonal labour and is forced to keep in reserve his wages made in the summer so that his family might survive the winter; however, the slave is not subject to the same precarity (Smith, 1963: 59). After a short rumination on the state of precarity of the free wage labourer, Smith draws the following conclusion:

> the wear and tear of the slave, it has been said, is at the expense of his master; but that of the free servant is at his own expense… It appears, accordingly, from the experiences of all ages and nations, I believe, that the work done by the freeman comes cheaper in the end than that performed by slaves. (Smith, 1963: 64-5)

According to Smith, though the capitalist must incur some of the cost of his worker's "wear and tear", it is to a far lesser degree than the slave owner. By freeing himself from the cost of the labourer's wear and tear and only purchasing labour power, the capitalist unleashes the degenerate and vulnerable character of the labouring human body. The state's deployment of biopower, as Foucault describes it in both the *History of Sexuality*, *Vol. 1* and in his lectures with entitled *Society Must be Defended,* is what emerges at the beginning of the twentieth century to manage and maintain the health and the vitality of the life of the population. We might say that this state takes over a role abandoned by the capitalist, yet with an entirely new set of technologies to manage this precarious life. The "society" must control its own wear and tear, as well as its own economic vitality. With the human capital strategy, capital takes on again the wear and tear of the "ability-machine" embodied in the individual as a zone for speculative investment. "What is the value of an education?" and "how much should we spend to save a life?"[3] are two inverse, yet mirrored calculations attempted by the human capital strategy. These questions express the two poles of the risk management that policy makers must address when assessing problem of human life conceived of as fixed capital. Human capital attempts to both understand how to increasing equity through education while at the same time accounting for the consumption and eventual obsolescence of the ability-machine in the process of production.

To be clear, I am not arguing that the human capital strategy inflicts forms of violence and expropriation that are qualitatively comparable to slavery, either historically or in numerous contemporary instances of slavery that exist across the globe. I am arguing, however, against the exceptionality of our present moment within the university by insisting that we must understand both historical and structural continuities within technologies of expropriation and accumulation by dispossession deployed by financial capitalism, as well as place of the human capital strategy within them.

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3 The other major element of the literature written by policy makers on human capital involves questions surrounding the value of human life from the perspective of health policy. The question "how much should we spend to save a life?" is expressive of this vein of literature on human capital and comes from a chapter title of *Valuing Life: Public Policy Dilemmas* (1980), Rhodes, Steven, ed. Boulder, Colorado: Westview Press.

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