

Hedging, Valuation, and Revolution: A Short History

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Introduction: Financialization and the Crisis of Money

Between 1971 and 1973, all the systemically important economies in the world went off the abrogated gold standard of Bretton Woods, which they had been on since the end of World War II. What happened to money? Well, the narration goes, the hegemon could print and lend without restraint, which led to an enormous increase of national reserves across the globe, and this had something to do with ‘financialization’ of the global economic process, and the demise of all things good and wholesome. Forget about the welfare state. No one talks about communism, or socialism, or even democracy and fascism in the terms of the Western Enlightenment anymore. What happened?

As one of the protagonists of this paper states, “To describe an organism, we do not try to... catalogue it bit by bit, but rather to answer certain questions about it which reveal its pattern: a pattern which is more significant and less probable as the organism becomes, so to speak, more fully an organism.”^{1,2} In order to answer the question of what happened to financialization and where we might find a form of money today, we are going to describe these organisms in terms of patterns. Specifically, we are going to analyze the patterns of executed human labor of hedging risk on large scales and the objective code or information stored in electrons and their interaction with magnetized language (coding and decoding) apparatuses on the computers of today’s traders. These provide a short history of the institution of hedging, and what that means for the subjective expression of revolution today. We will refer to the latter pattern as

¹ References will be with regard to the author, whose work is listed in the bibliography. If there are more than one work of any given author cited, the citation will be accompanied by a date.

² Wiener, p. 95.

‘derivatives,’ which this essay claims, are one of the primary recognizable forms of money today, and the form of money which rests at the center of the global statist process. Money now probably takes on a variety of forms.

Hedging as Martian Invasion

‘Hedging’ generally refers to the process whereby one party hopes to transfer risk, or the probability that a given financial asset will decrease in value with relation to all other financial assets, and whose principle object of exchange, it seems, is derivatives.³ In neoclassical terms, the good of risk is sold in the competitive market for a price, and Pareto optimal welfare gains are had by all. Andrew Cornford, in his article, “Risks and Derivatives Markets: Selected Issues,” explains that,

During the period from the middle of the 19th century until the late 1960s, the expansions of future and option trading on exchanges involved commodities... The enormous growth of financial derivatives since the late 1960s is linked to the introduction of trading on exchanges in an expanding range of financial futures and options.⁴

Hence included in the term ‘derivatives’ are instruments such as futures on commodity, bond, and currency markets, and options. There are doubtless other forms of derivatives. Eurodollars and money markets, it turns out, are also derivatives, as they do not fall into the nation-states purview of regulation. This statist logic and transcendence is a major theme that will be elucidated throughout. All of these instruments have the common and essential feature that they are meant to spread risk out over an environment, so that the

³ It should be noted from a standpoint of intellectual integrity that I don’t believe in probability, or any of the other modern ideal constructions implemented in this essay. But I believe in the ideas of the essay, and the communication of them, so I use the language at my disposal. This, in turn, effects the radical transformation of the ideas expressed, hopefully.

⁴ Cornford, Andrew. 1995. “Risks and Derivatives Markets: Selected Issues”. UNCTAD Review. Geneva: United Nations Conference on Trade and Development, p. 190.

buying and selling parties may more effectively manage their investments and how their own portfolios handle risk.

There are many data available for the consideration of hedging instruments, though much is not known about some, such as the value of hedge funds proper. What is not as widely recognized is the magnitude of their institutional capacity, and the correlation between that capacity and financial and real market forces. A cursory look at the figures of the derivatives market bring something like the experience of seeing a gnashing Martian for the first time to one's mind.

Today, according to the most recent Bank for International Settlements Triennial Study, published in June 2004, "The total estimated notional amounts of outstanding OTC contracts in the survey amounted to \$220 trillion," which had risen 10% from the end of 2003.⁵ In June 1998, when they published the first report, "the total estimated notional amount of outstanding OTC contracts stood at \$70 trillion," which was up 130% from end-March 1995, which puts the March 1995 around \$30 trillion.⁶ According to The World Fact Book, published by the CIA, world GDP for 2004 was 55.5 trillion dollars, which puts the total derivative contract volume at about 400% of world GDP.⁷ Further, it has grown over 700% in the past 10 years, and if past GDPs have been similar to current GDP, has created about 40% of global GDP on average a year in contract value. In the most recent BIS quarterly report, "in the last quarter of 2004 the combined value of trading in interest rate, stock index and currency contracts [reached] \$279 trillion,"⁸ which means that more than the entire value of the contracts (unless they grew

⁵ *BIS Triennial Review*, June 2004, p. 2. Available from www.bis.org.

⁶ *BIS Semiannual Report*, June 1998, p. 2. Available from www.bis.org.

⁷ <http://www.cia.gov/cia/publications/factbook/fields/2001.html>

⁸ *BIS Quarterly Review*, March 2005, p. 41. Available from www.bis.org.

beyond \$279 trillion) is being traded on a quarterly basis, or 5 times global GDP is traded on a quarterly basis in the derivatives market. This is a colossal magnification of a capitalist process, we will argue, and on face value alone calls for an about face to ward off an obviously Martian attack. There are structural, historical reasons why the derivatives market has come to such a place, and why it will probably expand its institutional scope throughout the economy.

What this paper hopes to do is to deduce a theory of hedging and its effects on valuation, financial markets, the real economy, and other human institutions from Marx's theory of money. Along the trajectory of time, which even a poet of Marx's caliber could not foresee, we will encounter a number of institutional histories, which lie beyond this deduction, but help us trace its flows through time. We will also bring in four theorists (one from the early 1950s, another from the early 1990s, and two from our own century, who work together), who have something to say about the histories of these institutions, to help us with our task of theorizing these trends.

The point of this paper is not to contribute something substantive to the research on derivatives markets, but to create a theoretical analytic framework for considering them, which can be taken as a *précis* for further academic study. The focus will be on broad terms and theoretical categories, and not specific smallish developments. That is a finer scope for a different, and fine, book.

Marx's Theory of Money

This reading of Marx's theory of money focuses on its social aspect. The material transfiguration of social valuation, embodied in the material production of the hedging

instruments, comes from a reading of information theory, which we take on in the next section. We're going to look at the social basis of Marx's theory of money and its relation to production, with the aim of analyzing the derivative as a larger pattern of this idea.

Money is a material condition of commodity production. It arises when social production changes into a commodity – or capitalist – system. As a commodity is a product of labor not intended for the material processes of the one who produced it, a commodity system relies on privatized, and itself commodified, labor. As capital brings privatized labor under its jurisdiction it seeks means of payment or exchange with competing capitals. “That the products of labour must take the form of commodities... implies their differentiation into commodities [on the one hand] and the money commodity [on the other hand].”⁹ Marx explains, “A commodity is an object a person produces that does not satisfy their immediate social survival, but is rather to be sold for means of survival/production.”¹⁰ As trade or barter does not exist in the sense that individuals do not exchange goods or quantities of goods for goods that augment their survival, a universally acceptable object must be used for transacting what has become abstract means of production, commodities, from one capitalist to another. This object is money, and as it functions as a form of privatized labor in the economy like all other objects, it must be a commodity.

Money thus is the social expression of commodified labor. Specifically, it is society that acts upon commodities and produces the objective material equivalent in the form of commodity money. Marx explains,

⁹ Marx, p. 188.

¹⁰ Marx, p. 273-4.

Only action of society can turn a particular commodity into the universal equivalent. The social action of all other commodities... sets apart the particular commodity in which they all represent their values. The natural form of this commodity thereby becomes the socially recognized equivalent form. Through the agency of the social process it becomes the specific social function of the commodity which has been set apart to be the universal equivalent. It thus becomes – money.¹¹

Thus, “Money... is the measure of value as the social incarnation of human labour.”¹²

Money, as the Martian like derivative, is constantly trying to find a way to express itself. According to Marx, “World trade and the world market date from the sixteenth century, and from then on the modern history of capital starts to unfold.”¹³ Money, as the disembodied and primary form of capital is the vanguard of the capitalist process. It is always and constantly trying to jump out of its bounds, in hopes of alienating the next chump who happened to get his labor stream crossed in its path. It seeks to multiply itself.

Gold was not efficient enough of a means of transaction in the international fiat economy, and when the gold standard disappeared, the fiat money multiplied 7 times. Robert Wade, in his article, “The U.S. Role in the Long Asian Crisis of 1990-2000,” discussing one of the many superstructural issues associated with this propagation of money, explains that, “Under Bretton Woods, as one (surplus) country gained central bank reserves another (deficit) country lost, so world central bank reserves increased only slowly,” and that, “the new system had no such constraint.”¹⁴ Under the Bretton Woods system, the monetary process of capital accumulation was constrained by the amount of gold, and the rigidity of social institutions valuing that gold, namely the Bretton Woods

¹¹ Marx, p. 180-1

¹² Marx, p. 192.

¹³ Marx, p. 247.

¹⁴ Wade, p. 9.

agreement. Gold acted as friction in the smaller system of valuation. After the Bretton Woods agreement collapsed, Wade explains,

persistent US current account deficits raised central bank reserves in the surplus countries without causing a fall in the US's. The result was a surge in world central bank reserves, which increased by over 7 times between 1969 and 1981 and permitted a multiplied expansion of credit.¹⁵

Without gold, money found a number of commodities to append itself to, such as fiat currencies.

Technological control aided the process of social valuation, and the manifestation of money in a variety of forms. The form we take up next is how electronic information has facilitated the introduction of a new form of money. Part of Marx's analysis is the material constraints to the production of gold, which in the 18th century counted as the social commodity valuation of capital *par excellence*. Today the material aspect involved in the production of hedging dividends is electrons and the physical nature of electrons. The way that they interact with the productive apparatus of society presently makes them act like information. They are physical receptacles of information. Their valuation, as the valuation of gold and other commodities, is a product of a social process with specific historical institutions of its own.

Information and Money

The reason why gold works as the "social representation" of the productive process is that it is both durable and malleable, and sufficiently rare to act as an effective representation of money. But, here we have the reality of the productive process, it remains just that: a representation. The commodity form itself, though it may take on

¹⁵ Wade, p. 9.

deterministic and universal aspects, is itself a representation, if part of an expression, of social reality. Gold seemed to be the material object *par excellence* of the money form, until banking operations became sufficiently complex and a market for bank notes developed its own – thought certainly secondary, if pro-cyclical – productive market economy.

The printing press, which enables us to reproduce sufficiently rare representations of social valuation, and the digital computer have provided technological expressions and material objects for the further advent of the money process. It may be that electronic value is a new form of money, when brought to bear in light of objective material processes – primarily technological innovation – over the past half-a-century. Marx explains that money “serves only as a symbol of itself, and can therefore be replaced by another symbol.”¹⁶

Marx explains that “value... transforms every product of labour into a social hieroglyphic.”¹⁷ A hieroglyphic is a sign which is meant to be decoded by the viewer, who shares the cultural constraints of the producer. Value, as a product of society and not the individual, transcribes data concerning the process by which goods take on value into products. Marx explains, “the characteristic which objects of utility have of being values is as much men’s social product as is their language.”¹⁸ The social relation, exemplified in its objective form as money, is in some very deep sense a link between language and valuation.

Norbert Wiener, the person who first used the term cybernetics in the 20th century, considers material process more generally to be modes of communication, or probability

¹⁶ Marx, p. 226.

¹⁷ Marx, p. 167.

¹⁸ Marx, p. 167.

fields, which produce both language and valuation. Language, considered to be a cipher, or deterministic function which codes and decodes language streams, is part of communications theory more generally. We can consider the communicative aspect, in this probabilistic sense, of money.

By probability field Professor Wiener, who wrote the quote about consideration of an organism in the introduction, is talking about a human theory which describes a phenomena in terms of its own limited time and space. It is part of the general human experience of a locality within time and space. Probability is when an individual prescribes numbers to processes they consider in the environment and assign them weights of occurrence, given other processes' weights of occurrence. A system comes out, which may be intelligent if it interacts with the world at large.

It turns out that the material aspect of communication involved in the exchange of electrons coded into derivatives valuation have much the same properties of information. We use Professor Wiener's communications theory to talk about derivatives as information, and to consider more in depth how they are money and what the nature of their functioning is.

Professor Wiener explains, "languages... are epiphenomena of human intercourse, subject to all the social forces due to changes in the pattern of that intercourse."¹⁹ Here Professor Wiener and Marx, as witnessed from the hieroglyphics discussion, are in clear agreement. He explains, "The transportation of messages serves to forward an extension of man's senses and his capabilities of action from one end of the world to another."²⁰ Further, he feels that "the distinction between material

¹⁹ Wiener, p. 88.

²⁰ Wiener, p. 98.

transportation and message transportation is not in any theoretical sense permanent and unbridgeable.”²¹ It is in some very real sense perfectly legitimate to think of human labor as being extended through time and space, particularly when we take into account the alienated aspect of commodities. There is no reason why an electron cannot carry with it the sweat and blood of the working class, just as there is no reason why gold could not be traded for slaves during the Spanish conquest. Wiener himself – serious as he is – makes reference to the possible transportation of entire humans across measurable distances by way of encoding and decoding a message.

As he explains, “Matter is not infinitely divisible, nor indeed from any absolute standpoint is it very finely divisible.”²² Electrons in this sense fit perfectly well into his, and our, larger typology. The patterns of executed human labor of hedging risk on large scales and the objective code or information stored in electrons and their interaction with magnetized language apparatuses on the computers of today’s traders are the institution and object of the trade, manufacture, and exchange of a money commodity. Here we can see that electrons, particularly when conceived of in the probabilistic terms of communications theory and quantum mechanics, are a perfectly viable form for capital to invest with value and productive capacity. They can travel around the world almost instantaneously, and there are enough electrons on the tip of George Washington’s nose, on the American Quarter, to, if given the right coding in the right social-institutional process, generate more values than that invested in all the gold reserves in the world in derivatives contracts.

²¹ Wiener, p. 98.

²² Wiener, p. 100.

It is not the code, or the computer, or the fiber optics cable that the traders of derivatives use as the creation of commodity money, but the electrons themselves which infest the circuitry. As Marx states, “The object the worker directly takes possession of is not the object of labour but its instrument.”²³ It is, also, the social process, both as encoded in the dead labor of the wires, computer, and real estate, as well as the valuation of the knowledge as specific commodities of other circles, such as prestige, nation, race, and religion, to name a few, which go into the valuation process. The particular social institutions which grant traders access to the immense capital sums of banks are also integral to the history of the institution of the derivative.

Marx also states that “instruments of labour not only supply a standard of the degree of development which human labour has attained, but they also indicate the social relations within which men work.”²⁴ The social institutions which support the edifice on which the money commodity exists are important historical factors of consideration. As these electrons can be used and exchanged according to the flow within the system, it is a mediated knowledge which comes to represent the frontier of production. Like all knowledge, however, it is human and therefore graspable, even in its inhumanity.

To go back to the analogy of the gold and slaves, to accentuate the trade of labor for the money commodity, we can understand how the religious, racial, and authoritative social institutions enabled such a starkly weird and inhumane process. Similarly, as derivatives discipline financial markets and real productive networks into new divisions of labor and productive mediums, they also do so according to the same material logic applied to gold.

²³ Marx, p. 285.

²⁴ Marx, p. 286.

But there is one pointed difference. In the process of electronic exchange, the production happens *on its own accord*, and the material commodity is just along for the ride. This substantiates Marx's statement that "in fact it is capitalist accumulation itself that constantly produces."²⁵ The commodity form has been utterly marginalized in the process. In the exchange of electrons, the owner's of the banks may never actually own them, and it doesn't really matter. Communication happens in such a way that the electron will never take up roost in any one terminal for more than a probability phase of time. It will engage the code of the hard drive to recode the hard drive, and make money for the capitalist, but in the process of the consumption of the electron, it does not fit into the place of a part of a machine would in exactly the same way.

The difference is bridgeable. The difference is that what is produced is a form of network production, or social valuation that takes place within an autonomous and distended distributed network. We can talk about this coherently within Wiener's theory of information and communication.

Wiener explains that, "Even in the most material field, production and security are in the long run matters of continual invention and development."²⁶ More generally, he feels that "information is more a matter of process than of storage."²⁷ There is a certain type of process which he feels magnifies the informational aspect of production, and places its wholesale implementation on a foreseeable horizon. That form of production he calls 'the automatic factory'. The important thing about the factory is that it is intelligent. It takes in information from its surroundings, say demand for clothing, and produces commodities according to that information. It is self aware in the sense that it

²⁵ Marx, p. 782.

²⁶ Wiener, p. 121.

²⁷ Wiener, p. 121.

understands and regulates itself according to protocols of its production. If it breaks down it fixes itself, and in the case of a major problem, it calls for outside assistance.

Wiener explains that, “The factory system started before the machine system, as a means of introducing discipline into the highly undisciplined home industry of the individual workers.”²⁸ This is similar to the role derivatives play in disciplining financial and real economies in view of an eminent view of networked production. Wiener explains that there are many ways to make systems function according to logical rules expressed in smaller systems. He feels that “the work of discriminating and of forming the pattern of behavior for this is done under conditions in which the power losses are insignificant.”²⁹

To go back to the general theory of the automatic factory, and then suggest how the derivatives market constitutes an automatic factory and how it serves as a functional representation of a new way of organizing production, let us turn to Wiener's own description of the process. He explains, “The computing machine represents the center of the automatic factory, but it will never be the whole factory... It receives its detailed instructions from elements of the nature of sense organs.”³⁰ These sense organs take in internal information of the machine as well as external stimulus necessary and useful for the machine to function. “Besides these sense organs,” he explains, “the control system must contain effectors, or components which act on the outer world.”³¹ These enable the machine to have feedback operations, whereby it interacts with an external and objective world according to its own logic and produce commands in a logical fashion. “The

²⁸ Wiener, p. 143.

²⁹ Wiener, p. 146.

³⁰ Wiener, p. 156.

³¹ Wiener, p. 156-6.

machine may carry out feedback operations, either those of the simple... or those involving more complicated processes of discrimination, regulated by the central control as a logical or mathematical system.”³² Wiener explains, “The all-over system will correspond to the complete animal with sense organs, effectors, and prioreceptors, and not, as in the ultra-rapid computing machine, to an isolated brain, dependent for its experiences and for its effectiveness on our intervention.”³³ This differentiates it from computers in that its interaction with the world and its mediated of sense of self within that world give it an intelligence that enables it to carry out the logical programming of its existence.

How is this the same machine present in the derivatives market? It functions according to the same principles. The derivatives market is best considered as a distributed network, where individual traders are located on different nodes of the network. Each trader responds to their own socially programmed logic of making money and configures information sent into the network according to that logic. The system has the institutions of great financial corporations on its side, and electricity has a small premium. It takes in derivatives prices in the form of electronic code, consumes them in forecasting their expected change, and reproduces them toward the system with a new set of code. The new value, minus the not too significant talent and real estate, is the surplus value. The informative desire to make money is sent back into the position as a call or a put. Risk is hedged according to this principle, and the same principle is feedback into the network. The system is complete, with positive feedback.

³² Wiener, p. 157.

³³ Wiener, p. 157.

Moreover, the global and hegemonic distributed network is robust to evolutionary changes in its environment. As it happens to be on the top of everything else, it can further its own ends of profit and survival adaptively, as the world goes forward in time. The institutions which create the hedging market are well worn and firm. The first is ignorance of the populous, and general complacency in the consuming class of the world. No one knows or cares about the derivatives markets. Americans are much more interested in fighting wars against non-existent foes and electing presidents who try to take away their social security. The language required to be a trader and to maneuver around such trading spaces has become increasingly technical. A significant portion of trades that take place during the day are conducted by computers operated without the interference of traders.

The question that unsurprisingly but naturally nags us is: But where does the money come from? This is very similar to the related banking question, 'Where does the money come from?', except the derivatives market does not have anything but social valuation, which works in its favor, and unlimited supplies of electronic self-generated information to fall back on. If it falls, it falls into a bed of goose feathers. If an individual trader or group of traders try to cash in on their contracts, it will invariably encounter individuals who will either buy, or in the case of a run, will at first sell, and then buy, in the same way banks do, securities in order to take advantage of each other's psychology. It even becomes systemically rational for the system to induce shocks and panics to maintain discipline in the face of scarce profits.

But what is the process itself, by which the money is made? As we have seen from our numerical introduction, hedging risk works a lot like banks on top of banks. As

Cornford explains, “In a futures or forward contract one party (the long) agrees to buy something in the future from another, and the second (the short) to sell it.”³⁴ He explains that,

In practice most positions in futures are offset before maturity: longs can cancel their obligations by selling an identical contract, receiving a profit or loss equal to the difference between the price at sale and that at initial purchase; and shorts can achieve the same result by buying an identical contract, in this case profit or loss being equal to the difference between price at purchase and that at initial sale.³⁵

It is fact that traders simply never have to cash in their contracts, because they simply sell them off to some other party wishing themselves to hedge their own risk. Marx states that “the quantity of money which can function as means of circulation is fixed for a given average velocity of circulation.”³⁶ With a light speed velocity, the liquidity constraint does not exist. It may be interesting to put a quantum mechanical model into a communications framework to see how the physics of such an exchange process work at the speed of light, in terms of information production. When money is both the means of circulation and the only variable capital involved in the material process of production, money can be generated according to arbitrary social mechanism. The derivatives market is a highly solipsistic and self-referential network, which works according to the logic of the sovereign automated factory.

The quantitative proportion in which these derivatives are exchangeable become dependent on the production itself. It is the activity or mechanism of the production, both in terms of social production and the specificity of the local productive enterprise as it is situated within social production, that accords value to the object. “The quantitative proportion in which these things are exchangeable become dependent on their production

³⁴ Cornford, p. 190.

³⁵ Cornford, p. 191.

³⁶ Marx, p. 216.

itself. Custom fixed their values at definite magnitudes.”³⁷ Here we see how it is possible for there to be in fact a custom, or some type of social architecture that “fixes the value” of a commodity at a definite magnitude. If you happen to have all the financial capital in the world, i.e. banks and other derivatives trading organizations, and you happen to have the technical capacity to make the monolith speak, i.e. have the code which ciphers the language using the material of the electrons, then your productive capacity can only be determined by future custom, or the social and therefore material artifice in which your labor takes place in the capitalist process of derivatives trading that the banks take.

Marx explains that,

As soon as the factory system has... the technical basis peculiar to it, machinery, is itself produced by machinery,... this mode of production acquires an elasticity, a capacity for sudden extension by leaps and bounds, which comes up against no barriers but those presented by the availability of raw materials and the extent of sales outlets.³⁸

In the derivatives market, this happens in two senses. First, in the sense that the derivatives market can work in the first place. In order for money to become as productive as it can, in the form of bank credit, financial securities, and finally derivatives, the sub-economy of derivatives must be produced by the machines of the financial markets and the real economies. The second sense is the sense in which particular machines of valuation, in terms of practices of trading applied to derivatives trading, which may be as informal as a friendly relationship between traders (which may not be insignificant as the crisis of Barings demonstrates) or as mechanic as the computer program used to trade for Long Term Capital Management, are themselves produced by

³⁷ Marx, p. 182.

³⁸ Marx, p. 579.

the machine of the derivatives trading market itself. The trajectory of pricing in the derivatives market is obviously self-fulfilling, as we have seen by the huge increase in the value of the derivatives market. The availability of raw material, as we have seen, is unlimited, and the sales outlets is based on a robust self-regulation which takes into account contingency.

Marx explains that,

[The] fragmentation of the total social capital into many individual capitals... is counteracted by their attraction. The attraction of capitals no longer means the simple concentration of the means of production and the command over labour, which is identical with accumulation. It is concentration of capitals already formed, destruction of their individual independence, expropriation of capitals by capitalist, transformation of many small into few large capitals. This process differs from the first one in this respect, that it only presupposes a change in the distribution of already available and already functioning capital.³⁹

This is nearly identical to Wiener's understanding of probability theory of the study of distributions. In the production process of the automated factory, which can be said to be a quite high form of production, the realization of profits by capitalists happens systematically merely as a change in the distribution of already available and already functioning capital. If one trader makes out, another goes down, but together they create a feedback of intelligent expansion. This process of intelligent expansion, as Wiener presumes, sets the stage for, or more correctly is the first visible part of, the social process of implementing the productive process of the automated factory into the economy at large. Wiener could not have seen the degree to which our current computers have developed, and while he did anticipate the rigidity with which our intellectual production staggers about, seeing is believing in the extremes of the world. Marx explains that,

³⁹ Marx, p. 777.

[With the] existence [of] the credit system... everywhere the increased scale of industrial establishments is the starting-point for a more comprehensive organization of the collective labour of many people, for a broader development of their material motive forces, i.e. for the progressive transformation of isolated processes of production, carried on by customary methods, into socially combined and scientifically arranged processes of production.⁴⁰

Markets will become accustomed, as they already have, in many senses, to producing in networks, which are more flexible and competitive over the long term than the hierarchical production of firms. This will manifest itself in a far more advanced and superior form of control that is composed of a pyramid of composite overlapping networks, with no regards to state or legal, much less democratic, sovereignty, and will represent a further development and triumph of the capitalist process.

Professor Wiener considers, in his own tone, what will most likely be the product of the overhaul of the productive process by the automated factory. “I have spoken of the actuality and the imminence of this new possibility. What can we expect of its economic and social consequences?”⁴¹ He believes that “the intermediate period of the introduction of the new means... will lead to an immediate transitional period of disastrous confusion,” and that “industry will be flooded with the new tools to the extent that they appear to yield immediate profits, irrespective of what long-time damage they can do.”⁴² This consideration is well apt to deal with the derivatives market.

He lastly concludes that,

A sort of *machine à gouverner*, [elsewhere referred to as a mechanical Leviathan], is thus now essentially in operation on both sides of the world conflict, although it does not consist in either case of a single machine which makes policy, but rather of a mechanistic technique which is adapted to the exigencies of a machine-like group of men.⁴³

⁴⁰ Marx, p. 778-80.

⁴¹ Wiener, p. 161.

⁴² Wiener, p. 161.

⁴³ Wiener, p. 182.

Even at the onset of The Cold War, the statist mechanization inherent in capitalism and the process of our historical evolution had produced extremely high level institutions which could be described by Wiener as machine like. These machine like organizations have come more and more into the fore as the last century has given way to this century, and it is argued that the derivatives market manifests the height of their organization. It is with this understanding that we turn to the informational state, the long, and projective, twentieth century, and a new formulation of the global Empire as expressed in Hardt and Negri's theory of the new global sovereignty, in search of a more substantiated history of hedging, valuation, and revolution.