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Capital after Capitalism

The evolution of the concept of capital in the light of long-run sustainable reproduction of the species

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Abstract

The capitalist mode of production has fulfilled a most astonishing 'historical mission' for the human species. It enabled an explosion of labor productivity gains and the discovery of new utility dimensions. But this progress came at the price of accompanying explosion of contradictions, of unequal benefits and burdens across global and local classes of humans. This paper sets out to explore what will happen if capitalism is finally ending, if its mission collapses. To do so a workable definition of the essence of capitalism is needed, I propose this to be the 'capitalist algorithm' – for a detailed treatment see [Hanappi, 2013]. The most interesting question then concerns the social mechanisms that might overcome – revolutionize – what currently dominates the behavior of large production conglomerates as well as their military arms *on a global level*.

Following the tradition of Hegel and Marx it can be assumed that a large part of the capitalist algorithm simply will have to vanish. But as history shows there also always is a remainder of a mode of production that in an inverted form (Hegel: negation, German Marxism: 'Umstülpung') becomes part of the next progressive mode of production. To identify what 'Capital after Capitalism' could be, what has to be abolished and what might survive in which form – remember the double meaning of Hegel's concept 'Aufhebung' – is a central prerequisite for a proper understanding of the coming revolution of the current mode of production. Since each step on the ladder of global social evolution is also a step in social human consciousness, this step in understanding implies a direct impact in guiding the actions to accomplish this turnover.

Introduction

In a world in turmoil, ever larger parts of the population are experiencing that political leaders have no answers to their vital questions, conventional knowledge in economics and political science simply does not explain what actually happens in the world economy, living conditions have started to deteriorate. The current way of living seems to approach its final end, the capitalist engine that looked so superior when in 1990 the Soviet Union dissolved now, after the disaster of 2008, seems only to be waiting for its last deadly blow.

Prophets of prosperity, promising dream worlds based on their own distorted perceptions, are successfully winning elections in an age of alienation that allows to streamline political attitudes of an electorate that receives all perceptions of the outside world on its smartphones. In this cacophony the notion that we live in a capitalist mode of production that can be understood has been lost, at least by the general public. Capitalism not only can be understood, it can be placed in the historical role it had to play and – most important - the conditions for the further development of human societies after capitalism can be explored. This is what this paper aims for.

In part 1 a preliminary answer to the question ‘What is capitalism?’ will be provided. The two lines of attack to this difficult task are the historical perspective and the logical perspective. Since any experience is finite, the straightforward next topic concerns the end of capitalism. In part 2 the metamorphosis at the end of capitalism is investigated: when it breaks, where will it break? Can we learn something on the pieces of the puzzle, on the mosaic that the next mode of production can build out of the broken elements of capitalism? The answer in part 2 is positive, yes, the contours of what we could reach for are becoming visible, obscured by the clouds of this age of global alienation, but getting clearer every month. The third part then emphasizes what is thought to be the main characteristic of the next mode of production: the return of time and space. This indeed easiest can be understood as an inversion of the limits that capitalism hits in time and space. But there is more to that thought, as will be explained in this part. The conclusion then draws together the different topics touched in the preceding parts and expresses the hope that Thomas More’s utopia after 500 years and in modern form will materialize.

1 – What is capitalism?

British classical political economists of the 19th century experienced and identified the world in which they lived as being different from societies of the Middle Ages. Since the most obvious change had taken place in production methods and the way production had become a consequence of spending money for the means of production, they summarized their

diagnosis in the statement: Capitalism is a mode of production. There are two approaches to understand what makes capitalism a particular type of a mode of production¹.

One possibility is to study economic history, the observed development of human societies. In a famous statement of the classics this approach was praised by saying that 'all knowledge in the end reduces to knowledge about our history'. Today this approach often is called the *diachronic approach*, investigating a phenomenon along the time line of its emergence.

Another possibility to understand a phenomenon is to investigate its current essential variables and their relations. The logic found in the contemporary processes then might reveal a general property of our society. This approach usually is called the *synchronic approach* to a phenomenon, since it develops its abstraction by generalizing properties of synchronizing processes today, occurring in the most advanced societies.

Proper social science combines both approaches, switching between the two and using suggestions from the one to improve investigations in the other domain. A brief application of both research streams for the concept 'capitalism' is sketched below.

1.1 - A diachronic synopsis to position capitalism

A possible structure for historical development of human societies has already been presented in [Hanappi, 1986]. In the very long-run only '**early social forms**' and '**commodity producing societies**' are distinguished. While in the first tribes of hunters and gatherers the production of surplus output for the explicit purpose of exchange was not a common characteristic, we now still live in a commodity producing society². Concentrating on commodity producing societies Karl Marx - following the mainstream of serious historians of his time – suggested to distinguish three stages of commodity producing societies: the **slavery** mode of production, **feudalism**, and **capitalism**. It is intriguing to study how such different types of agents and their relationships, each of them more or less stable for many generations, did emerge in a relatively short time period out of the breakdown of its predecessor. I have dubbed these deep structural breaks in commodity producing societies: metamorphosis. In the relatively short process of a metamorphosis (the correlate in physics is called phase transition) the basics for the longer run of the next stage are laid. Metamorphosis clearly is an open process, there always exists a certain finite set of possible fits of the remaining and newly emerging pieces – agents, institutions, etc. – with which a new mode of production is built. The study of the history of political economy can discover how metamorphosis actually has worked.

The step from feudalism to capitalism typically could be traced back to a general difficulty of feudal classes to finance their territorial aspirations. In times of mainly agricultural production growth of surplus and power was bound to take place as war for new territory. But soldiers and mercenaries cost money, therefore finance started to play the dominant role for social development³.

¹ This distinction of approaches follows Ronald Meek's description of the 'logical-historical' approach, see [Meek, 1979, pp. 299-318].

² I apologize to all anthropologists for this much too rough summary of more than 80.000 years of development.

³ See [Gramsci, 1930] for the link from social functions to the switch of ruling classes. While the ruling class in feudalism goes back to families particularly successful as military leaders, in capitalism the drivers are those particularly apt to exploit and to re-invest in productivity increasing techniques (and eventually new products).

Money had already emerged before that break; it was a central feature of all commodity producing societies. Making exchange processes independent of the mutual coincidence of the needs of the exchanging parties, of loosening time and space restrictions, it was an omnipresent add-on to the essential processes in earlier commodity producing societies. But in capitalism it woke-up to become the central category, to be its own *raison d'être*. In previous societies it was just a non-commodity (not consumable) enabling better exchange processes of commodities, now the commodities became the less important accessories of the self-amplifying process of growing money property. Money accumulation being the prime motor of social dynamics, with commodity production becoming the dependent variable, led to a fascinating evolution of money forms, compare [Hanappi, 2013]. And since a sign system of social value, i.e. money, can only work if signs are understood and accepted – if necessary enforced by police – money forms were paralleled by an evolution of governance forms, of state forms. This in turn surfaced as a further, more fine-grained sequence of stages of capitalism.

In a first stage **merchant capitalism** increased productivity by exploiting the difference between cultures, between their products (e.g. spices and tea), between their socio-political structures (e.g. buying slaves in Africa), and between their different technological advantages (e.g. large cotton fields in America). Combining these differences in trade activity, e.g. the Western trade triangle⁴, allowed to increase average global productivity. For the single merchant this increase materialized as profit, as a sum of money that could be added to the money advanced to enable the trade activity. The ships of a colonial empire were both, instruments of trade and military units to secure political dominance of a hegemonic state. The prime nation of merchant capitalism were the Dutch, their state, *de facto* Amsterdam, was the first hegemon of capitalism. On the financial side the Amsterdam Bourse exemplified a new institutional rule set that could handle global exchange of social values⁵.

With the metamorphosis from merchant capitalism to **industrial capitalism** the hegemonic role was transferred from the Netherlands to England. The triggers for a metamorphosis can be found by looking at the limits, the bottlenecks encountered by the temporarily stable previous stage. In the case of merchant capitalism, a serious limit consisted in the almost constant output of merchandise, of stagnating productivity, in the advanced colonial hegemonic states. The second largest merchant capitalist power, namely England, was faster in overcoming this limit by introducing systematic increase of productivity in manufacturing – what today is praised as technical innovation. This new dimension of the characteristic feature of capitalism, i.e. productivity increase, has to be considered as an overlay on the still existing network of merchant capitalist relations. An even more sophisticated arrangement between the political power of still feudal circles and the new drivers of the wealth of the nation⁶, i.e. the capitalist class described by classical political economists, was emerging. Class, a central concept for the understanding of 19th century industrial capitalism, became visible to classical

⁴ Compare [Frank, 1978].

⁵ Compare [Braudel, 1979, chapter 3].

⁶ In his classic book Adam Smith emphasizes only the welfare increasing benefits of division of labour on all levels to explain the superior role of Britain, see [Smith, 1776]. The downside of the processes constituting industrial capitalism, like the deepening of the contradiction between the British ruling class on the one side and slavery in Africa and the working class in England on the other side, are neglected.

political economists because poverty of masses of people occurred in front of their windows, in England⁷. Politics were visibly national class politics, the strong ties across nations that Europe's nobility had maintained during feudalism were loosened. At the height of the hegemonic power of the British empire its culture⁸, above all its restless thrive to penetrate the whole colonial world with its economic style, laid the foundation of what till today can be considered as the core algorithm of capitalism.

From a financial point of view London – like Amsterdam a large port, showing that trade till today mainly is sea trade – accomplished and extended the art of contractual arrangements that merchant capitalism had produced. Money needed by innovative entrepreneurs or merchants was not lent from a rich uncle anymore, organizations facilitating the flow of money quickly were institutionalized. It was already during industrial capitalism that a first split between entrepreneurial activity and the financial support it needed appeared⁹. While technical innovation needed time and usually was stuck within a well-defined production process or product line, finance was a highly flexible and rapid instrument that could easily jump from one production sphere to the next. There certainly were contractual measures trying to fix the gaps between the two speeds, another source of the growth of the law system and accompanying professions, but as national finance developed into international finance the bridge between the two factions of the national capitalist class started to wobble. Today this divide still is a main source of concern.

The rupture to the third stage of capitalism, the metamorphosis that started with World War 1, had been triggered by a coincidence of events that suddenly transformed latent political contradictions into a full-fledged global war. A major ingredient of these contradictions was a relatively new phenomenon in the superstructure of advanced capitalist countries: nationalism¹⁰. After the most disastrous catastrophe of WW1 the interwar period can be interpreted as the difficult transfer of hegemony from England to the USA, from the reign of the Pound Sterling to the era of the US Dollar. The third stage of capitalism that emerged can be called '*integrated capitalism*' (compare fig. 1).

⁷ For David Ricardo a main topic was to distinguish two groups within the ruling class: old-style rentiers and progressive industrial capitalists [Ricardo, 1817 (1973)]. Karl Marx focussed on the conflict between industrial capitalists and the newly emerging working class. Framing history as a history of class struggles and despite his taking side for the proletariat as the next ruling class, he also acknowledges that the ruling class of capitalists fulfils a necessary historical mission, namely to increase labour productivity [Marx, 1848]. After capitalism less labour time will be necessary to produce the commodities and services for basic needs of mankind, for its primary biological metabolism.

⁸ Compare [Hobsbawm, 1975].

⁹ Early observers of this process typically interpreted it from a socialist political perspective, see [Lenin, 1914 (1999)] and [Hilferding, 1908 (1968)]. Both had read John Hobson [Hobson, 1902].

¹⁰ It was not just the motivation for the assassin of heir apparent Franz Ferdinand, Gavrilo Princip, it also was a general attitude of large parts of the population in many European states. In the Austrian-Hungarian and the Osman empires nationalism within the empires pushed towards their fall, while German nationalism turned outside, against the large colonial powers England and France to fight for global leadership.

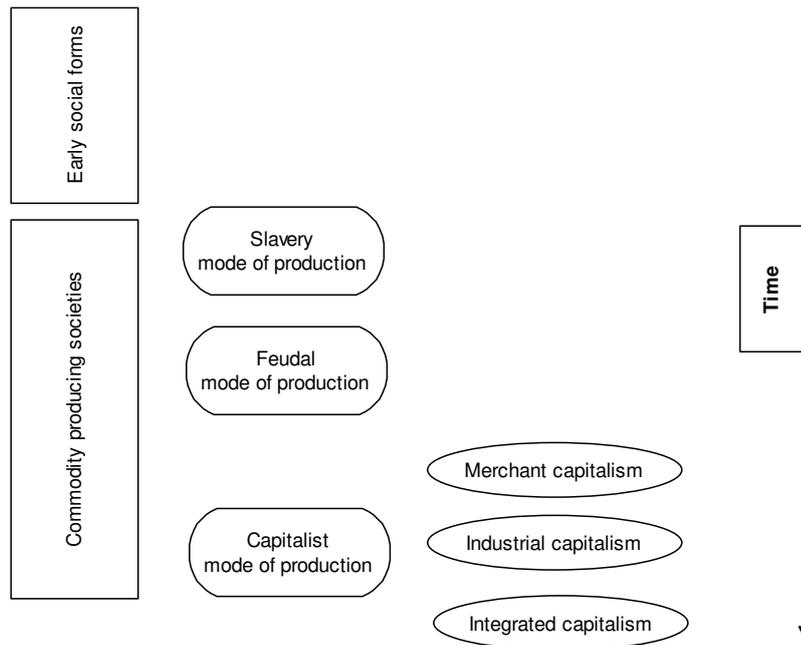


Figure 1: The historic position of Capitalism

Under the lead of the USA it set out to integrate the deep contradictions that broke up in WW1 into a new form of the core capitalist algorithm. A central difficulty had been the exploding conflict with the national working classes that in Russia had even culminated in the founding of the USSR. As a consequence, Western democracies enabled integration via participation of working class representatives in national governments. This was only possible if feudal political leadership was abolished, and this should have solved another contradiction, namely how to overcome the conflicting territorial aspirations linked to feudal governance. Unfortunately, political entrepreneurship in the form of Fascist movements was able to surprise the world with a fallback to authoritarian dictatorship in Germany and Italy¹¹. Its rise to power to a considerable extent was owed to its capacity to provide an answer to the question of unemployment that became extremely urgent during the Great Recession of the 30-ties. The German answer to the sharp economic downturn of the world economy was the same as in other advanced economies: a stronger state should intervene and should provide employment and effective demand. But in Germany the NSDAP played on the stirring-up of nationalism and specified this public employment as the recruitment of soldiers. Economic activity was commanded by the newly installed institutions of the NAZI-regime; it concentrated on the build-up of weapon industries. As it turned out, the fascist variant of 'capitalism' that rests on military conquered territory and state terrorism is not a sustainable

¹¹ A thorough discussion of Fascism goes beyond the scope of this text, for a still valid characterization compare [Kalecki, 1943]. A decisive role certainly was played by the newly available technical devices, like broadcasting, which enabled 'micro-politics': The transfer of the leader's voice into each living room and each brain at any time of the day.

form of governance¹². The 1000 years dream broke down after 7 years, which brought the human species close to the edge of extinction.

The same general feature of integrated capitalism, namely stronger involvement of the nation state to eliminate emerging contradictions stemming from the working of the core capitalist algorithm, had been applied in the USA in a completely different form. Anticipating in practice what Keynes prescribed later in his 'General Theory', see [Keynes, 1936], Fordism and 'blockbuster' Roosevelt's 'New Deal' tried to eliminate troubles of lacking effective demand and oligopolistic inefficiencies.

What these measures incorporated and anticipated from a financial perspective is most interesting. In a sense it is only in integrated capitalism of the American variety after the defeat of Fascism that the concept of capital comes to its full flourishing. In the practice of economic policy of the 25 years after WW2 Keynes ideas most visibly proved that capitalism, in its third stage of integrated capitalism, can fulfill its historical mission. It led to dramatic welfare increases, though only in the developed countries of Europe and North America¹³. It is remarkable that towards the end of this period economic theory started to stroll away from its former commitment to provide models that can explain actually observed phenomena.

Since the mid 70-ties integrated capitalism is on the retreat. The monetary mechanisms that had allowed to realize profits, i.e. to sell goods and services, by letting consumers and states going into debt, these mechanisms are successively called into question. A worldwide roll-back of Keynesian policies, like fixed exchange rate regimes or a pro-capitalist role of state intervention in markets, is taking place. In the mid-run this conservative revival in a few areas could successfully iron out bureaucratic excess of state administrations; but the general judgement certainly can only be that the force of integrated capitalism was inverted. Since 25 years integrated capitalism now is disintegrating.

Disintegration also meant that financial power now was rapidly centralizing and concentrating in the USA. Hand in hand with this development ever more superior military might and a top position in research could be developed there¹⁴.

In 1990 another external shock¹⁵, the political breakdown of the USSR and their satellite states, was giving this process a severe twist. Without a global military challenge, the weapon industries and related political cadres seemed to have lost their reason of existence. But after a short period of confusion these sectors and their promoters recovered and formed a new globally acting force. To a considerable extent, NATO today is shaping world policy again; see [Hanappi, 2017] for a more detailed treatment.

¹² An insightful study of the internal economic processes of fascist Germany was provided by Sohn-Rethel, compare [Sohn-Rethel, 1973 (1987)].

¹³ In [Vercelli, 2017] this first phase of financialisation is called 1st financialisation.

¹⁴ The European intellectuals and scientists that fled from the fascists in WW2 had already prepared the ground for this advantageous spurt of research in the USA.

¹⁵ Seen in a wider context this shock was not external. It was the coincidence of a late success of Western propaganda via TV and an even more delayed effect of Stalin's misconception of 'socialism in one country' - held together by army and police. Both sources might be well described endogenously in a more extended elaboration.

An even more remarkable turn has been taken by international finance. Alessandro Vercelli describes it as 2nd financialisation, see [Vercelli, 2017]. Indeed, the dynamics of integrated capitalism since the end of the Soviet Block in 1990 has to be understood in the context of the global political economy.

The conservative roll-back in economic policy that had started ten years earlier, in 1980, was characterized by a continuous flow of capital towards the USA; mainly due to higher interest rates and the promise of higher profits rates that in the Reagan era were stimulated by save state public investments in the military-industrial complex of the USA¹⁶. In Europe this outflow of capital led to an economic downturn as interest rates started to rise too and capital cost increased. While many SMEs went bankrupt and Europe's big unemployment problem started, the group of European transnational companies organized counteraction – they pushed for a powerful political representation of their needs, something that could build a counterweight to the government of the USA. These efforts resulted in the strengthening of the European Union in the mid 80-ties. But contrary to the USA, several European countries were characterized by relatively strong positions of labor movement institutions, unions, social-democratic governments, chambers of labor, and the like. As a consequence, purchasing power did decrease moderately only - households and governments went into debt - and Europe became the largest consumer worldwide. Across the Atlantic capital was amassed, blue collar workers' wages could fall to the level of the 60-ties and the inequality in income and wealth started to explode.

Then, in 1990, it seemed that the world now had become capitalist, that the system of integrated capitalism finally had reached its natural destiny. In Europe, this euphoric misinterpretation led to a short boom that broke down in 1993. Since capitalism certainly is not the final natural state into which human societies quickly return as soon as misbehaving labor movement institutions (including Stalinist aberrations) are eliminated, 'capitalism in 100 days' (Jeffrey Sachs) did not happen. In fact, only little happened in the newly opened territory, the capitalist machinery could not take hold of the deeply ingrained local behavioral rule sets. In the long-run the most successive local political entrepreneur turned out to be Vladimir Putin, who is playing exactly on the backward cultural traits of Russia that held back the core capitalist algorithm. US money was more successful in finding fertile grounds in China. The two most important developments that hold integrated capitalism alive till today are the excessive use of *exchange rate exploitation*¹⁷ and the emergence of *global value chains* constructed on basis of the former. In both respects China is a pivotal global player. China's arrangements with international finance controlled mainly in the USA are a key explanatory element for the dynamics of global political economy. As the tremendous economic upswing

¹⁶ Investment in war equipment is one of the few investments that does not need effective demand of consumers with purchasing power. It is eventually 'consumed' by military action and paid from the state. It is thus no surprise that a hegemonic state, which is in control of the worldwide used currency, can build-up military superiority. The amounts needed can partly be financed by increasing the money supply. The remaining effect on money markets then results in a rise of domestic interest rates.

¹⁷ Put simply, exchange rate exploitation is based on a continuous decrease of wages (in terms of the world currency) in producer countries due to a continuous devaluation of their local currency vis-à-vis the world currency, i.e. the US Dollar. This mechanism uses local customs and political regimes in producer countries to ensure persistent low consumption levels of the local population. It is essentially a modernized form of one of the above mentioned elements of merchant capitalism.

of China shows, its government successfully managed to position itself as a middle-man, a managing entity, in between the urgent needs for further profit promising global opportunities that large US-based finance expresses and the possible local production possibilities in the poor producer countries, being itself for the most part still one of them.

Integrated capitalism thus to a large extent has achieved the integration of global production. In doing so it also has undermined the motor of its historical mission, namely to increase average global labor productivity. This mission had the tricky feature that the private vice of profit maximization of firms (from a catholic point of view) implied the public benefit of rising labor productivity – in the long-run less labor time and more leisure time for all would be possible if workers would fight successfully for an adequate distribution of these benefits. Since average global productivity growth since 1980 approaches zero and the move to a more adequate distribution is necessarily (exchange rate exploitation!) politically blocked, the historical capitalist mission has run out of steam. After 1990: Enter 2nd financialisation.

In the desperate search where to place the enormous amounts of money that have been amassed in large financial pools new financial techniques cut almost all links to physical economic property. Assets are ascribed a certain value not because they refer to a factory producing products that are thought to represent a certain social value, they are rather priced according to their expected selling price in an ever shorter future – without too much reference for which ‘physical entity of last resort’ they stand. The move from savings of households – that in Europe now rather are going into debt – to assets held by the small group of very rich investors is symptomatic. Expectation based bubbles in financial markets are an immediate and necessary consequence. The ICT bubble in 2001 was a first warning, the great financial crisis of 2008 might have been the deadly blow for integrated capitalism. Since then the turmoil of chaotic piecemeal engineering in economic policy and finance is not ending, and is not successful either. Substantial economic growth, i.e. capital accumulation, is not returning. What comes next?

1.2 – A synchronic description of the core capitalist algorithm

The diachronic positioning of capitalism has not been possible without some recurring references to the logic of the *core capitalist algorithm*, which in turn is itself a concept derived from the study of history. It entails what the diachronic approach reveals as essential characteristic and translates it into a more abstract and more general model. Since it should cover all three stages of capitalism it has to be independent of the different money forms by which these stages differ. On the other hand, it must entail the above mentioned historic mission of capitalism, which distinguishes this type of commodity producing society from other such societies, like feudalism. As the previous chapter already made plausible this core property consists of the capitalist algorithm shown in figure 2.

The entity that applies this algorithm can be a merchant, a firm owner, a transnational company, a financial entity, or – as the recent ideologues of privatization try to stipulate – a government or even each single human individual. It is evident that depending on the entity chosen the names used in the labels of figure 2 have to be slightly modified. Note that an essential part of this algorithm consists of producing and using a set of visions. These visions

are different internal models maintained by a social entity, which usually are easily transferred (at least partly) in communication processes. This not only explains Schumpeter's empirical observation of swarming of innovations, see [Schumpeter, 1939], it points quite generally to the utmost importance of communication processes.

For each member of the set of currently possible visions do ('vision loop')

- Produce a vision of specific entrepreneurial activity
- Check expected wage cost
- Check expected interest on credit-money (vulgo 'capital cost')
- Check expected effective demand
- Compute expected growth rate of capital
- Estimate the probability to achieve that growth rate

End of vision loop

Choose the vision yielding the highest utility of a mean-variance utility function

Check if the selected vision's utility exceeds the expected utility of a supplier of credit-money

If the lender's utility is higher, then perform the chosen project,
else become a supplier of credit-money.

Figure 2: The core capitalist algorithm

Source: [Hanappi, 2013, p. 262]

At this point of the argument it is fruitful to return to the latest developments in economic history: With the recent surge of information technology worldwide communication processes made a quantum jump. Media today can often frame the interpretation schemes of the population stronger than local direct experience or face-to-face communication can do. As mentioned in the previous chapter, the use of broadcasting to disseminate fascist interpretation schemes has been an early warning signal of the force of centralized media power. After WW2 financial bubbles are another obvious example. The spread of the core capitalist algorithm as a general feature of human nature to be applied to states and single persons has been the central assault of information power masterminded by politicians of the conservative roll-back; there it went under the name of 'privatization'. Its final task would be human individuals that in their self-perception are just singular carriers of business plans, of internal models looking like the core capitalist algorithm.

In many OECD countries this vision of conservative ideologues has already reached considerable shares of the population. But since it is built on the use of technology, hardware and software, which is open to other manipulating power groups too - e.g. religious organizations, neo-fascist groups, nationalists, environmentalists and the like - several competitors for the minds and hearts of the global audience appeared on the stage. In the last years this not only has contributed to the rise of Islam and the migration wave to Europe when war and Islamic repressions hit Arab populations, in the sequel it also is fueling state control of information flows within the advanced countries - in the name of anti-terrorism and security.

Any vision of the next mode of production has to take into account this qualitatively new mode of communication structure the next generation will live in, compare [Hanappi and Egger,

1993]. The eminent importance of this issue can be expressed by stating that we are entering an **age of alienation**, where the primary metabolism of the human species can and will be pushed in the background and interaction can and will predominately take place in the information sphere, using symbolic objects that are alien to primary needs. A closer look at current developments, e.g. BREXIT and the election of Donald Trump as president of the USA, reveals that we have already entered this new age.

The core capitalist algorithm, these days more than 500 years old, since 2008 by and large proves to be an inadequate model for the new century. Not only is it inapplicable for the huge majority of the world population and its social institutions (including production units), in the mid-run it is even forcing zero growth on its most optimistic proponents, the transnational corporations.

To get some ideas which features of the old mode of production will survive, and which will disappear, the best advice can be found by looking at the most dramatic break lines, the major contradictions of today's integrated capitalism.

2 – Rupture Lines and Order Parameters

In theoretical physics the phenomenon of phase transition has been extensively studied and today is pretty well understood. If water starts to boil, there is a small range of temperature within which several properties of water experience a dramatic qualitative change; e.g. in the colder state water cannot be compressed, while in the hotter state it can. The phase transition thus eliminates some essentials (a 1st set of variables) and creates a set of new essentials (a 2nd set of variables). Moreover, it takes place along a continuous change of a third set of variables, e.g. temperature. Physicists therefore define phase transition as a discontinuity of the derivative of some dependent variables as the third type of variables, the so-called order parameters, change¹⁸.

As explained in more detail in [Hanappi and Scholz-Wäckerle, 2017] phase transitions in non-living systems are a very instructive metaphor for metamorphosis in political economy. The old set of properties described by entities and their relations falls apart, at least a substantial part of it ceases to exist. During the relatively short time of rearrangement, in societies usually only a few decades, a small, in any case finite set of possible new arrangements for the next temporarily stable arrangement is available. Several groups, classical political economy called them classes, struggle, build coalitions, propose possible visions, are eventually recombining and invent new institutions until a winning coalition is able to dominate the others¹⁹. Given the current potential of means of mass destruction, survival of the species at no point of metamorphosis is guaranteed. Returning to the concept of order parameters, the corresponding index in evolutionary political economy should represent two highly significant tendencies in the evolution of human societies: First, ***the tendency towards ever larger area***

¹⁸ Second order phase transition discovered by Landau, [Landau, 1937], takes place if the second derivative experiences a jump. In this case transition is smooth, but variables can emerge and disappear.

¹⁹ Note that standard mainstream economics, i.e. neoclassical economics, has never touched these most crucial nodes of social evolution; despite its adherence to the simple Newtonian mechanics it uses. This reveals its implicit mission, namely to describe the stability of capitalism, and *only* the stability.

and population, which a political entity commands. From small tribes, to medieval cities, to nation states, to continents, to the global society. Second, the **increasing political participation** of larger parts of the population in the political process, *i.e. democratization*. While the first trend is an important element contributing to the division of labor, which in turn frees us from necessary labor, the second tendency is the challenge to use increasing leisure time for the rising importance and difficulty of self-governance. An index, indeed a measure of progress, thus also is an index of consciousness of the human society. Under the extensive perspective of the first trend, consciousness proceeds from an individual's consciousness, to family consciousness, to tribe consciousness, to class consciousness, to a nation's consciousness, to a continental unit's consciousness, to conscious humanism. The second trend then outlines temporary difficulties and emerging successes, *i.e. the pulsation*, of the efforts to **bridge the contradictions between the ever larger political entities**. Conscious intensions of the different political entities are partly contradicting and have to be reconciled. As temporary arrangements, safeguarded by ever more centralized police- and law-systems, institutions are providing longer periods of a peaceful working of a political entity, in capitalism they have been dubbed 'social structures of accumulation' by David Gordon [Gordon, 1980]. But during such stages contradictions slowly take on new forms asking for new solutions, which then – in a metamorphosis – lead to an eruptive restructuring, a revolution.

In capitalism the essential political agent that drives its historical mission, that increases productivity by pushing towards new forms of exploitation, is the **entrepreneur**, the character mask of merchant capital, industrial capital, and integrating capital. The capitalist algorithm performed by all of them already shows an implicit contradiction that is related to the concepts of '**social value**' and '**exploitation**', a contradiction that did not disappear but was continuously deepening. At the beginning of an accumulation step the acquired inputs have to be bought, and since the labor time bought must be cheaper than the revenues achieved after a successful sale of output to allow for a profit, it follows that what is rewarded to the owners of labor power can buy less social value than the social value represented by the revenues. This simple fact of accounting is called exploitation. Of course, also non-labor inputs have to be bought from other owners of means of production, contributing to their revenues, which then leads to a repeated reshuffling of profits within the capitalist class depending on price structure dynamics. But the core principle to **extract social value from labor time** remains valid. How this is done distinguishes the different stages of capitalism, and since social value appears in the physical world as money, the different stages did breed a sequence of money forms, compare again [Hanappi, 2013].

Capitalism can therefore be considered as the mode of production that lets money forms change, from a simple physical carrier of social value, a symbol, to the form of credit, and finally to its appearance as capital²⁰. Earlier forms of commodity production already used simple money, but only in capitalism this inner evolution of money forms was possible. Hand in hand with this stepwise evolution a sequence of regulatory accumulation regimes took place. What was regulated and policed by the institutions of the respective ruling class were

²⁰ This process has been described as the trend of increasing financialisation by Alessandro Vercelli [Vercelli, 2017].

the flows of social values that the relevant exploitation processes and their correlated distribution channels produced. The concepts of 'finance', 'distribution', 'social justice', and the like thus all are derived from the concept of social value and a specified set of prevailing exploitation²¹. In each stage the typical entrepreneur added new features to its behavioral setup: A new, innovative mode to bridge the opposition between private vice (profit making) and public benefit (overall productivity increase) emerged. In the last two decades of integrated capitalism this mysterious entity 'entrepreneur' materialized as the **transnational company** (TNC). It has been able to globalize productivity increases and positive profit rates by the introduction of **global value chains**. The independence from the fetters of single nation states not only circumvents all local achievements of labor movements by the use of exchange rate exploitation, it also leads to a new form business governance. Capital not only became independent from a specific economic sector, now it considers itself to be independent from any political interference²². In a sense this global reach of business governance can be viewed as a prelude – though mirror-inverted – of democratic, political global governance. What now proves to be impossible for TNCs alone, for global business governance, is to reconcile the saved profit rates with sustainable mechanisms of social value transfers. In this last phase of integrated capitalism, which aimed at incorporating global class contradictions in a framework of social value transfers, vulgo money streams, this task evidently reached certain new frontiers.

On the one hand the seemingly tranquilized class contradictions brought about an underground movement of dissatisfied, confused and angry citizens in several advanced countries. Indeed, in retrospect, the fascist movements of the 20th century can be understood much better in this perspective. The force of these movements – today as well as in the past – can be channeled into a takeover of authoritarian regimes by gifted 'political entrepreneurs'; a major tool being the **technological media world** outside democratic control. With respect to the introduction of a new mechanism for social value streams, in mainstream economics called 'finance', these authoritarian regimes typically are ultra-orthodox²³ in amassing public debt to build-up police states and military, what in fashionable terms is called 'security'. The contradictions they were promising to solve thus are quickly transferred to exploding political contradictions between nation states, finally leading to wars. On the global scale at which a 3rd World War certainly will take place, this is synonymous to the extinction of the species.

On the other hand, the welfare enhancing side of capitalism, spreading productivity increases throughout the global population finally got stuck; indeed, it always has been a slow and cumbersome process enforced by the world-wide labor movements. Process innovation as well as product innovation have always had a political bias, though mainstream economists stubbornly exclude it from their analysis. Their central task to reduce cost in the production

²¹ It is important to distinguish the dominant exploitation form from still co-existing older exploitation forms. E.g. in merchant capitalism the dominant capitalist merchant acts in an environment where older exploitation forms in other continents play an important role.

²² Political leaders – Ronald Reagan was an earlier example – are considered to be actors selling the goals of strong groups of TNCs to a nation-wide public that actually has no influence on global dynamics.

²³ Ultra-orthodox in this context means that the authoritarian leaders dress their national myths in a pseudo-feudal mode of class-rule, simply disregarding already existing global financial mechanisms, and therefore sacrifice their exploding public debt at the altar of 'autonomy'. Aggression against neighbouring states, i.e. war, is the typical result of such a development.

process typically goes hand in hand with technological unemployment, while the introduction of new products, of new utility dimensions, always has to anticipate customers rich enough to buy these commodities; in contradiction to the wages of employees, see the first task. With these difficulties global innovation practices based on single firm profit-maximization became a problem. To allow 'non-effective demand'²⁴ to build-up large-scale debt means only to postpone the harvest of profits by a class-internal transfer to banks and tax authorities. This latter faction of the ruling class, i.e. finance ministers, have to take the heat. With the technology induced speed-up of all financial processes such a Keynesian short-term orientation necessarily results in a speed-up of ever larger financial bubbles. The global financial bubbles of 2001 (ICT bubble) and 2008 were the first signs of the sclerosis of innovation under the dictate of the capitalist algorithm.

In the light of this narrative the central question of this paper is if and how the capitalist algorithm will survive the metamorphosis. This question cannot be answered by a simple 'yes' or 'no'. As explained above, its survival is only feasible if a deep change within the algorithm takes place. Its major goal variable, namely accumulation ('growth') of the mysterious variable 'capital' will have to be substituted. A simple substitution by growth of the equally mysterious variable (aggregate) 'utility', i.e. 'welfare', will not shed further light on the question. The only more instructive investigation could be the study of the currently most pressing problems of the existing mode of production. In the phase of metamorphosis several coalitions of political classes will try to gain hegemonic power, and the promise how to bridge these visible contradictions, these gaps, will probably be an essential element of the struggle. Still a well-received promise can nevertheless lead to disaster, e.g. Hitler in the mid-thirties, promised correctly to restore employment and national pride – in the short-run. Today, a positive vision for solutions of global problems has to be scientifically grounded and long-run oriented²⁵. This has to be kept in mind when studying the limits of the current state of integrated capitalism.

A **first limit**, a breaking point, clearly is **global finance**. Reflecting a very special form of social value as it is extracted from the global population and redistributed towards multi-layered global classes, it is the central piece of the mosaic to be re-framed. In this respect a feature of the sequence of capitalist phases comes into play that has not been mentioned so far: In the course of time the political entities involved have become larger; from regions, to states, to continents, to the whole globe. Finance capital today, like the global value chains it entertains, is a global phenomenon. But the political counterpart that could control it, that could provide its democratic legitimacy, does not exist yet. The non-existence of global governance vis-à-vis global finance and TNCs, above summarized as business governance, thus is a contradiction that must be eliminated. Many more fine-grained measures of democratic control will have to be implemented too. The general thrust, more empathetically spoken the general truth, has to be that that finance and its institutions are political elements, and not just profit

²⁴ Keynes' concept of 'effective demand' is a subtle hint that workers might need something but only those who have the money to buy it can be considered as demand. The adjective 'effective' suggests that effects are only those elements that play a role in the mind of the selling firm owner.

²⁵ The adjective 'sustainable' is not used in this paper, since the concept of 'sustainability' plays a more restricted role than usual. Here 'sustainable' only refers to the property of a program to perform correctly during the next, temporarily stable mode of production. It therefore is replaced by the loose expression 'in the long-run', which avoids the misleading connotation of being valid for eternity.

maximizing firms. In Europe the latest change of the role of Central Banks and the ECB already signal that this transformation is on its way.

The **second important limit** comes from the set of problems summarized as **environmental problems**. Again, most of these problems ask for coordinated interventions on a global level, thus implicitly hinge on the existence of global governance. As for finance, some preliminary moves in the right direction are already appearing, e.g. the new energy policy of Germany. But for most global environmental limits, e.g. scarce water resources, the non-existence of global governance implies non-action. The disastrous growth imperative of existing integrated capitalism drives itself to the edge. As recent developments in the USA show, re-orientation towards accelerated profit growth in the name of an ideology of national greatness usually is directly linked to environmental ignorance.

The **third important** limit concerns **political governance** itself, namely its **feasibility in** the above mentioned **age of alienation**. The danger of new, ever more dangerous wars between nations streamlined along centrally implanted dogmas is just the other side of the coin that could point towards the implementation of a democratic global governance. The coin is flipped in the air by modern information and communication technologies, and ICT are here to stay. To get from here to there, that is to arrive at global governance as it is needed for overcoming the first two limits, the age of alienation has to be mastered. In that sense this third problem is the hardest and the most urgent. In certain aspects it resembles the French enlightenment and indeed several small bonfires lit by scientists worldwide are already announcing the possibility of a second renaissance, see [Hanappi, 2015]. To unify these first attempts a common vision of the approaching next mode of production will be a pivotal element.

3 – The Return of Time and Space

From a more general perspective the limits reached are limits of time and space²⁶.

First consider **time**. As noted by classical political economy all economics in the end boils down to the economics of time. Social value, as it finally appears in the form of financial power, originated in the production of commodities that consumed labor time. Partly this labor time is applied in combining it with frozen labor time spent earlier, i.e. with means of production, capital goods. Additionally, in some processes natural resources are used, some of them are not renewable. The human population itself is finite, and so is its total supply of labor time. But the problem today is not the finiteness of total supply of labor time but rather the facts that (i) redistribution of the produced social value follows a successful sale of one's labor time to the owners²⁷ of frozen labor time (means of production), that (ii) frozen labor is so productive that only a small part of more specialist workers can be profitably employed, and that (iii) it is necessary to sell all commodities to receive a surplus in cash. Some financial

²⁶ It looks like a joke, but the neglect of the limits of time and space is a mirror image of Kant's early emphasis on the utmost importance of time and space for human thought, see [Kant, 1781 (1998)]. Kant, of course, was one of the promoters of the ideas of French enlightenment in Germany.

²⁷ As Ann Davis recently showed, the evolution of property relations is a fundamental entry point to the understanding of class relations [Davis, 2015].

instruments today help to ameliorate the difficulties arising from the **divergence between unused labor time and private accumulation of social value**, e.g. transfers to support the primary metabolism of the unemployed or the build-up of debt to solve problem (iii). This avoids revolts and postpones the realization of already contracted fruits of exploitation to a later date – when debt has to be paid back²⁸. But none of the existing instruments is designed to eliminate the basic contradiction mentioned above that is the source of reappearing conflict after each step of piecemeal engineering. A **new type of time and value organization** therefore is the **main task of future global finance**, it only can work with a move back, from private to public decision-making. The mechanism of global business governance sketched above is the highest form of privatization, and it is dramatically failing to protect the species from political and environmental disaster. The **role of markets**²⁹ should be cut back to the tasks they are assigned to in the dream world of mainstream economics: as a **system of sensors for the taste of consumers**, tailored to specific goods and services. This too would be a **secondary function** of future global finance – the relation between life time and labor time thus could return to the command of the population, via a new type of political global finance.

The reduced average labor time for the needs of the primary metabolism of the species that capitalism has brought about will have to be re-arranged in both spheres, in global production as well as in global consumption. The link within and between both spheres, of course, is the social value attributed to labor time units and consumption units. In its most biological dimension the feasibility condition of the primary metabolism consists of the assignment of a vector of labor time units (for different types of labor at specified dates in different parts of the world) to a vector of quantitative consumption (goods and services at specified dates in different parts of the world). If the available time of the population is larger than this minimum reproduction level, then the distribution of the available total leisure time has to be decided on. It is at this stage where communication, bargaining, new voting procedures and new institutional solutions will enter the scene. Making time, competencies, and needs explicit is not a task that lends itself to a central planning office, it is a multi-directional communication process. What has to emerge is the correlate to the central nerve system of a biological entity. The language used for these global communication processes will have to supersede contemporary languages in several ways to master the enormous amount of information, data and programs, involved in bargaining; and the classes³⁰ involved in the process will have to learn how to work with new combinations of natural languages and algorithmic tools. Language shapes consciousness. The time concept of the species transcends the very limited time concept of its single individuals, with a new communication form, including self-

²⁸ This simple consideration already reveals why austerity policy is a proposal that leads to a breakdown head-on. It destroys demand.

²⁹ A common tool in ideological warfare is to elevate 'the market' to the status of an independent economic agent. Markets are not setting prices and quantities, they only provide rules that the actual market participants, sellers and buyers, have to observe. To be able to enforce these rules there must be a third party, usually a political entity like the state, which possesses more coercive power than the participants. With this constellation a large diversity of market mechanisms, of rule sets, can be designed. To pretend that markets are deciding something only serves to obscure the actual roles of participants and political entities.

³⁰ It would be naïve to assume that classes will disappear. But they certainly will not be aligned along the private possession of means of production. There might be other demarcation lines stemming from positions in production or consumption, or from geography.

communication on all levels, consciousness itself has to turn to the long-run perspective of a species. This is the deeper meaning of humanism, call it **vision 1**.

Now consider **space**. The world is a finite area and the option to expand accumulation to unknown territories has vanished long ago. Today, physical space by most people is experienced as local space, only the electronic world provides an expansion of space. But the latter expansion is limited by those who provide access and content of the internet. In the age of alienation, as described above, this seemingly expanding space actually could be a narrowing down of views. Enlarging the experienced space clearly is a main task for **global education policy**. Since education is part of infrastructure it has to be financed by taxes, and will have to result in large transfers that redistribute taxes collected in rich countries to parts of the world where education is most backward. A similar argument has to be made for non-renewable resources: for the scarcest of them strongest restrictions on consumption and highest efforts on technological improvements that substitute them have to be made. If this is carried out consistently physical restrictions probably can be brought in accordance with human needs, call this **vision 2**.

But before this is possible and space can return to the agenda of the human species as a manageable task, it is one of the most endangered elements of the current metamorphosis – similar to the threat coming from alienation. If a majority of the ruling class of contemporary capitalism transforms itself into an atavistic authoritarian dictatorship – Fascism in the 20th century can be interpreted as just a first, failed attempt in this direction – then it will concentrate its core military power in a geographically well defended area, a specified space on the globe. The USA is a prime candidate for this role. Nevertheless, this core will need strong links to the rest of the world to maintain its necessary exploitation processes. And for this scenario a different type of communication structure would be substantial: At one level ideological influence flowing from the central space to the periphery is needed (ideological dominance), while on a second level information on all activities of individuals outside the core has to be collected to avoid insurgencies (secret service activities). If successful, this organization of communication, of the ‘central nervous system’, produces a split of humanity, of two parts with two different types of consciousness. The consequence of this vision is the anticipation of a superior part within the human species, a superior ‘race’ exploiting the less valuable races. Space, i.e. geographically and intellectually understood territory, will be split into two asymmetric parts. It will not be returned to the democratically controlled sphere of the whole human species. This vision, **vision 3**, too poses high demands on innovation, though on completely different forms of new artefacts.

Visions 1 and 2 point to a new type of innovation activity, in [Hanappi, 2010] it was called **reproductive innovation**, while vision 3 rather sounds like what is currently happening to keep alive old style capitalism. The first type of reproductive innovation concerns social innovations that enable to overcome time restrictions including the invention of democratic mechanisms. They also should step forward to provide new dimensions of utility compatible with the new regime. The second type of reproductive innovations will be traditional technical innovations that adjust living circumstances in different parts of the world and take care of environmental limits.

This type of reproductive innovations stimulated in the first two scenarios (winning over scenario 3) then will be carried out by global governance institutions that then inherit the historical mission of capital³¹. This feature of a new form of society would be 'capital' after capitalism. Time and space would have returned.

Conclusion: Capital after Capitalism

As a matter of fact, it necessarily must remain a highly speculative enterprise to formulate ideas on what happens after capitalism. The metamorphosis of a mode of production is an extremely volatile process. The disappearing elements might reappear in a completely different form, democratic decision making in this new technological environment will often exceed information processing capacities of single human individuals. The age of alienation is waiting for us with a most astonishing menagerie of artefacts – if the process of metamorphosis comes to a positive end for mankind at all. The biological record shows that the end of a species usually can be understood as a metamorphosis that has not been mastered.

If it is indeed the end of capitalism that is approaching and not just the beginning of its next stage – and this seems to be the case – then the new mode of production will center around a new historical mission. Growth of productivity will slide to the periphery. Its major engine, the innovative entrepreneur, will become an element dependent on the new core mission. As far as we can see today this new core mission will have to be the mastering of living with limits reached by the human species (in time and space), and to be able to become an organic community along these limits. The central nervous system of this global organism already started to exist, to exist electronically in the form of the internet. From this perspective it today is just the necessary hardware for a conscious handling of the human species. From the same set of technological achievements comes a stupefying ability to support and substitute many of the management activities of humans related to their primary metabolism. From this perspective the 'second machine age' (see [Brynjolfsson and McAfee, 2016]) is a blessing and not a danger for employment. Given these foundations what remains for the new mode of production is to organize political, economic and cultural power in a way that secures reproduction of the species without losing the force of a vibrating pulse, i.e. reproductive innovation. Joseph Schumpeter saw that the end of capitalism is inevitable, he honestly regretted this, and predicted a gray and boring future of large scale administrative handling of affairs by bureaucrats³². Exactly 500 years ago, in 1516, Sir Thomas More (Morus) published his classic 'Utopia'³³, where at the beginning of capitalism he sketched a place that is not here – the literal translation of 'utopia'. His dream of a faraway island on which most of the hardships of the primary metabolism have been eliminated – by 500 years of 'neither just nor beautiful' capitalism (Keynes) – remained alive and today gains power because many technical preconditions have been reached. Now, the place 'no place' (utopia) could be here. Not on an unknown island out in the sea, but globally spanning around the whole globe. And this is

³¹ Immediate projects to be launched would concern large global infrastructure improvements for the poorest parts of the world.

³² See [Schumpeter, 1943 (2003)].

³³ See [Morus, 1516 (1995)].

exactly the core mission of the next mode of production, to enable utopia on a geographically limited globe and with a population that needs conscious global government in time.

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