

Orientation

On the Dynamics of Global Political Economy

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Abstract

For many observers, the dynamics of the global political economy during the last two years were confusing. The familiar political faultlines seem to shift, pathbreaking technological revolutions interfere with politics, in the face of all this the mainstream of scientific understanding in the concerned sciences looks pretty helpless. This paper sets out to provide at least a minimum of orientation, a proposal on what is currently important, how it is related, and what it might lead to.

It consists of four parts:

- 1) A characterisation of the current tripartite hegemonic autocratic capitalism
- 2) Four rationale speculations on how capitalism will dissolve in the mid-run
- 3) Why an epistemological break will be of central importance
- 4) The challenge of the environmental collapse initiated by late capitalism

To disentangle such a wide variety of tightly interconnected problems the text has to refer to a rather extensive apparatus of references. Nevertheless, it is hoped that some of the ideas presented are stimulating and can provide a bit of orientation.

The state of tripartite hegemonic autocratic capitalism

Trump, Putin and Xi are symbolic leaders of three empires, which are built on large-scale exploitation. The three symbolic leaders are old, as are their exploitation regimes. Their empires are built on an omnipresent algorithmic scheme, which penetrates the behavioural disposition of organisations and many human individuals: the *capitalist algorithm*.

The essence of this algorithm is to choose actions that promise the *highest increase in the individual monetary value* of the respective entity - organisation or individual - in the *shortest possible time*. Both characteristics are important. The first designates what is summarised as *capital accumulation* based on the social organisation of extracting *lifetime* (labour time) from workers and storing it as monetary value possessed by the ruling class¹. The second characteristic refers to the acceleration,

¹ Note that the concept of exploitation includes self-exploitation, i.e. the presence of both classes within the same entity.

which the repetitive application of the algorithm necessitates: The faster an exploitative process is accomplished, the sooner the next process can be started. Increasing the speed of the production process thus is just another surface of the same space-time trajectory of the capitalist algorithm.

The central creative contradiction of the capitalist mode of production during this last era of absolute, global, authoritarian capitalism², remains still the same as it prevailed since merchant capitalism 600 years ago: On the one hand, the division of labour enables mankind to increase its overall labour time productivity, while on the other hand the very same process produces opposing classes in the social entities (in production units, countries, finally in the global political economy and as forceful individual human ideology).

A closer look at the first stage of merchant capitalism in Italy's Northern city-states during the 14th century reveals that a pivotal role in the emergence of capitalism's creative contradiction was the almost mystical power of money and **credit**, which turns into capital accumulation. Its network extended outside into the emergence of feudal nation-states, and in parallel it turned inside into the smaller social entities living in these states. In this inside direction it increasingly assumes the form of **ideology**, in particular incorporating Christian ideology³ and its manifest, material form of a worldly church.

The combination of inside and outside growth of the capitalist mode of production proceeded along a sequence of stages till today⁴. The *two dominant elements* on this journey of the evolution of the human species were the forces constituting its creative contradiction: the **advance of labour-time productivity** and the emergence of social organisation that can consolidate its accommodating build-up of class conflicts, i.e. the **emergence of self-governance** (democracy) at all levels.

The historical record for productivity increase is unequivocal. Starting with slow but pivotal steps during the first two hundred years, it started to explode as soon as the scientific revolution in the natural sciences set in. The full blossoming of the productive forces was reached in the last hundred years⁵.

The evolution of the other side of the contradiction, the evolution of self-governance, is a distinctly different kind of story. Some early mechanisms of democracy can even be found in the slave-holder society of ancient Greece, but systematic evolution of self-governance only took off with capitalism. Production units, banks, and local city-states that gained self-governing independence from an autocratic emperor were the first signs. Classes emerged along their specialised professional activities (farmers, bankers, the military complex, etc.); in particular, the former slaves entered the stage as the class of human individuals without means of production⁶. By being forced to

² Compare (Hanappi, 2025a).

³ After 300 ad the Roman Empire had already proven that Christian ideology fits well autocratic regimes.

⁴ A structure for these stages is proposed in (Hanappi, 2026a).

⁵ In (Hanappi, 2026b) a more detailed description of the two elements of this creative contradiction can be found.

⁶ Compare (Thompson, 1966) will eventually.

allow workers to become citizens of the bourgeois state, a whole avalanche of additional contradictions became visible. The slogan of the French Revolution of 1789 - *Liberté, Égalité, Fraternité* - quickly turned out to contain fundamental incompatibilities. 'Liberty' had to be reframed as being freed from a feudal autocrat, but bourgeois law, maintained by the military and police, insisted that firm owners have the liberty to exploit workers, which restricted the liberty of the latter. 'Equality' contradicted the basic fact that all biological evolution is based on spirals of *disequilibrium*, e.g. class struggle, which each species has to overcome for further development - thereby acquiring new competences. 'Fraternity' is a useful hint at the importance of class building. But the three slogans remain mute on the dynamics that emerge when different classes enter into class struggles. At best, they express the hope that there will be a future social organisation of mankind, call it the self-governance of global democracy, which ensures sufficiently acceptable compromises at all levels of governance. But the vagueness and contradictions of the three slogans of the revolution are no deficiencies. As a rule, revolutionary solutions grow out of mastering contradictions.

Even the contradictions that the current tripartite hegemonic autocratic capitalism apparently is confronted with will eventually lead to a temporarily manageable global solution. Nevertheless, the word 'manageable' in this context has only a very restricted meaning: It only means that global labour time productivity might increase for another decade, though it will be accompanied by a turbulence of - hopefully only local - wars and environmental crisis.

It will be the side of democracy's evolution, which is threatened to lag behind technological advance - historically it has always led to human history as a history of class struggles - that now initiates a productivity advance concentrating on means of mass destruction. Such a degenerating mode of production cannot survive for a long time. Even if mass destruction is ameliorated into mass surveillance and global racism, the loss of the second pillar, of self-governance of the species, can set an end to the species as soon as the limits of the environmental capabilities of the planet are reached⁷.

The dissolution of global capitalism

It remains an open question whether the three empires can develop into a unified global autocratic capitalism. More recently, the output of global production processes has shifted towards the production of weapons of mass destruction, towards active or passive mass killing. The demand for this output stems mainly from large organisations such as nation-states. Its large-scale hysterical consumption is usually called war⁸. During a war, it is the military complex of a country which gains hegemony

⁷ For more details compare (Hanappi, 2026d).

⁸ To sell wars to the domestic public as a desire for security is a treacherous tactic of exploiters that contributes to the general decay of the officially used language applied by the ruling classes.

over the industrial complex of the ruling class. Even if it is only a more local conflict, the leader of the country can use it to suspend democratic feedback loops like general elections by declaring martial law⁹. In the course of this general shift towards the application of direct coercive force, it is evident that all laws encapsulating civilised non-violent behaviour are experiencing a throwback. Paramilitary groups and secret services, first hired by the new leaders to cement their dominance, may later acquire some independence under the control of local warlords. As the situation in Africa vividly demonstrates, such a state of affairs is highly unstable and hard to predict.

But instead of resignation with respect to a most probable prediction, four different *rationale speculations*, four scenarios, are possible. A *speculation* meets the threshold of being rational if the narrative it carries is internally consistent and close enough to what is currently empirically visible. It acts as a kind of compass, as Immanuel Kant once had formulated. Note that the description of various possible reasonable speculations resembles the structure of Schrödinger's equation ($i\hbar(\partial\Psi/\partial t) = \hat{H}\Psi$). On the left side of the equation, the velocity of change is made dependent on the changes in its current state in a given environment (distorted by the curvature of spacetime: $\hat{H} = -(\hbar^2/2m)\nabla^2 + V$) on the right side. It is only a relation of probability distributions without any actual prediction of where a particle is to be found or what the frequency of a wave is. Of course, the analogy is rather far-fetched; it only should legitimise the omission of a most probable forecast.

First rationale speculation: The USA finally win the Cold War

With the massive build-up of the Western weapons industry and its achievements in war technology (AI support), a series of further advances of NATO towards Moscow by local wars at Russia's borders in Europe and south-west Asia becomes feasible. If the situation in Russia becomes too difficult for Putin's inner circle, the loss of soldiers too high and the unrest in the civil population due to deteriorating living standards unbearable, then a regime change comparable to the takeover by Gorbachev in 1988 can be organised by Western secret services.

A pivotal precautionary step clearly has to be a subtle neutralisation of China's Xi Jinping. There are already several empirically observable interdependencies between the ruling classes in the USA and their counterparts in China¹⁰. These links are mainly based on firm-level economic agreements securing and dividing exploitation success across continents, which at the same time have been assured by political institutions. Of course, taming capitalist competition by civilising political agreements can always break apart if global hegemony seems to be possible. Nevertheless, assuming that an advanced coordination between US-style exploitation and China-style exploitation is

⁹ There are several contemporary examples of this strategy like Netanyahu or Zelenskyy. It remains to be seen if Donald Trump will use it to escape from a loss of his power at democratic elections. For the USA there are ample possibilities to declare (local) war to apparently weak opposing countries.

¹⁰ A very insightful book on China has recently been published by Elsner and Najmehchi (Elsner and Najmehchi, 2026).

emerging - remember that in a few years, eventually a new generation of leaders will have replaced Trump and Xi Jinping - then a kind of absolute, global, authoritarian capitalism might shape the development for a few years.

The victory of capitalism will still be doomed by two persisting contradictions: (1) The exploitation of a whole class of human individuals, probably still the majority of the species, is not comparable to the domestication of a species of animals. Global racism will quickly turn out to be impossible. A class of humans has a social memory on which it builds class consciousness and political strategy. (2) Even faster than this contradiction - though in combination with it - capitalism will produce its own environmental abyss, the collapse of environmental conditions enabling the survival of the exploiting classes¹¹.

Second rationale speculation: Domestic Class War and Money

In this scenario, the correct interpretation of what we observe is completely different. The Cold War is only an intentionally distributed hoax. The true story indeed is that there is an intense domestic class war in all three empires.

In the USA, Donald Trump is leading a class war against the low- and middle-income American population. It actually is a monstrous false flag operation, which sells the impoverishment of the lower social strata as a cultural war to defend the 'true American Values'. The interesting new strategy (I hesitate to call it *his* strategy) is to openly and continuously break all the stipulated 'American values' as a person. In this way, he propagates a kind of nihilism, of unbound lust for power, which his following voters could imitate. The result is a potential and partly manifest civil war in the USA that already produces paramilitary criminal groups fighting for dominance. The only remaining moral-free goal of this kind of nihilism is to make profit by whatever it takes. Predominantly, of course, by taking resources of others with direct coercive force - weapons and military threat¹².

In Russia, Putin has a similar domestic problem. After Gorbachev, Boris Jelzin openly declared Russia to be a capitalist country, disregarding the fact that capitalism cannot be simply 'declared' by an avowal to market mechanisms. Having lost its satellite states, thus its advantages of an important share of Eurasian division of labour¹³, there was the additional danger of a stepwise Eastern advance of NATO. After Ukraine in 2014, the next domino piece would be Belarus - if one followed Western media. As the history of Stalinist governance vividly showed to Putin, a leader of the Russian empire has not only to be plagued by permanent paranoia; he also has to show strength. Even if this strength is unwise or useless, it is needed to show the inner circle of domestic

¹¹ The ridiculous idea of Elon Musk to escape to the Mars has an emotional background that reflects this deeply rooted angst of the descendants of driven-out South-African colonial racists.

¹² Trump's trade war with the rest of the world is leading to domestic impoverishment too. Making imported commodities more expensive - scaling back the global division of labour - hurts the domestic class enemy. The large capital owners can act globally anyway. The story told by Trump's economist Stephen Marin is a pseudo-economic fantasy without any empirically testable background.

¹³ The main deal was manufactured Eastern European commodities for energy from Russia.

exploiters who is the boss. Thus, the invasion of Ukraine in 1922 was a necessity and a welcome opportunity to reframe Russia as a country at war - again with a false flag as a 'military operation'. From then on, it was possible to explain to the exploited Russian population that their continuously deteriorating living standards are caused by the war in Ukraine, which in turn is necessary to maintain national sovereignty and cultural identity.

As Xi Jinping once remarked, the big mistake of Russia was to let the group of big Russian exploiters, the oligarchs, leave Russia and settle in the USA and Europe. In that way, some of them could challenge Putin's leadership from the outside¹⁴.

Now Putin still needs the war, since it is the strict discipline implied by wartime military hierarchy, which helps him stay in power. He has managed to build up profound nationalism in the population and to link it to the historic glory of having defeated German Fascism. To recruit new soldiers, to insist on a kind of victory in Ukraine (even if 20% of the envisaged territory is rather disappointing), and above all to maintain the dominance in informing the poorer social strata in Russia; all these are the elementary pillars with which Putin can hope to succeed in the domestic class struggle.

In China, Xi Jinping started some precautionary activities already several years ago. By replacing potential competitors in China's hierarchy of the ruling class¹⁵ with devoted retainers, Xi produced institutional stability that lasts to this day. If disturbances occur, they mostly come from fluctuations in the global economy. During the global financial crisis of 2009, China followed an economic policy of state intervention that resembled classical Keynesian policy - with success. Another special feature of China's policy is its *focus on the longer run*. Therefore, current domestic stability interventions in the moment may remain invisible to the general public - though they are reactions to forecasted longer-run problems. A point in case is China's more developed technological effort with respect to environmental policy. Another one concerns its interdependencies in global value chains. To stay firmly established in the global production system is the best guarantee to avoid troubles with the domestic population¹⁶. In a sense, China's style of a turn towards stabilising domestic exploitation comes up to 'Wait and See'.

Third rationale speculation: Paper Tigers

It was in 1946 when Mao Zedong made his famous remark on the long-run inversion of real tigers into paper tigers¹⁷:

¹⁴ Zelenskyy's career that was furthered early on by the oligarch Ihor Kolomoyskyi is a perfect example for this argument.

¹⁵ The hierarchical power pyramid in China is very special, because the nodes in this network unite military, political, economic and cultural power.

¹⁶ Of course, the increased aging of this population is another long-run problem in China. The past has proven that the Chinese ruling class never shied off from taking drastic interventions to balance population dynamics.

¹⁷ Quote from "Talk with the American Correspondent Anna Louise Strong" (August 1946), Mao Zedong Selected Works, Vol. IV, p. 100.

Just as there is not a single thing in the world without a dual nature (this is the law of the unity of opposites), so imperialism and all reactionaries have a dual nature - they are real tigers and paper tigers at the same time. In past history, before they won state power and for some time afterwards, the slave-owning class, the feudal landlord class and the bourgeoisie were vigorous, revolutionary and progressive – they were real tigers. But with the lapse of time, because their opposites - the slave class, the peasant class and the proletariat - grew in strength step by step, struggled against them more and more fiercely, these ruling classes changed step by step into the reverse, changed into reactionaries, changed into backward people, changed into paper tigers. Moreover, eventually they were overthrown, or will be overthrown, by the people.

Today, 80 years later, exploitation still has not ended; ruling capitalist classes have not been overthrown. A central element in the observed fact that the exploited classes remained unable to revolt is the distortion of their perceptions that advanced media technologies made possible. This important innovation in the capitalist power structure, namely the ability to exert an increasing part of influence on a steadily less costly information power, replacing direct coercive power, had already played a crucial role in Adolf Hitler's ascent to his unchallenged dictatorship¹⁸.

Today, the 'Paper Tiger' is not made of paper any more: newspapers, books, and all printed material are much less efficient than electronic media. It started with TV and led to what today is called *social media*, which is distributed via smartphones. Information power now is an 'Electronic Tiger', and its strength has undergone a tremendous increase; one could even call it a qualitative jump.

This third rationale speculation tries to incorporate this overwhelming importance of the information power of Electronic Tigers into the image of maintenance and challenge to global capitalism.

Maintenance means that the individuals' internal model-building processes, which steer their actions, are to be modified in a way that makes the emerging actions compatible with prolonged global exploitation. In the Middle Ages in Europe, this task was the major function of the Christian Church: Work and wait on earth - for paradise after your death. For Electronic Tigers, the problem specification has shifted. For the exploited human individual, the interpretation of what is going on in the world is not provided by a visible outside ideological institution; it is disguised as an independent conclusion of the individual itself. The technologically and psychologically enriched devices (smartphones) make it possible to implant subconscious interpretation schemes, which individuals can mistake as their own conclusions.

An *interpretation* procedure works in two steps: First, what are the main objects to be considered as important, and second, what are the correct causal links, the 'programs', between these objects. To maintain the exploitation process, the interpretation has to deliver actions that conform to two main guidelines: Carry on working sufficiently and stay disciplined with respect to the prevailing (exploitative) social order. The typical

¹⁸ Compare (Hanappi, 2025b).

international centres of news agencies, which preselect and sort what is presented as important, already exist. For the second step, the causal framework construction, the private global telecommunication corporations are the governing networks. They are a mixture of three elements: (1) A political control institution transporting the basic ideology inherent in the capitalist algorithm, (2) a commercial enterprise maximising the difference between achievable revenues and production cost, (3) a tranquillising device that keeps its consumers on a disciplined track by transporting any emotional unrest into an electronic dream world.

If, with the help of Electronic Tigers, maintenance of capitalism succeeds, then this is possible because the *challenge* emerging from an anti-capitalist use of the new technologies has been successfully suppressed. In other words, the currently underdeveloped design of (revolutionary) global democratic governance - in particular, on what a path to power for the globally exploited could look like - is painfully missing¹⁹. It remains to be seen how long such an updated version of Orwell's 1984 could last.

Fourth rationale speculation: Bellum Omnium Contra Omnes

Another possible trajectory towards the dissolution of global capitalism is the falling apart into smaller, economically less developed but militarily strictly coercive regimes. The latter is a necessity if the fruits of a global division of labour are no longer available anymore. A comparable process could be observed at the end of the Roman Empire. Of course, this does not happen as an immediate breakup of any kind of social order, as the sudden appearance of the right of the fist of single individuals. It rather starts with alliances between smaller regimes, even by attracting parts of former hegemons. The newly formed tribe alliances need some commonalities; either geography or cultural traits play an important role.

Some recent, empirically observed developments might support this fourth speculation: The dramatic strengthening of Israel in the Middle East due to the support of the USA in the war against Iran has provoked a new military alliance between *Saudi Arabia, Turkey, and Pakistan*. As a binding link, these three states mention their religious orientation: Sunni Islam. In Eastern Europe, a new alliance called '*Three Seas Initiative*' has formed. It consists of several former satellite countries of the USSR that now form the Eastern front of Western (NATO-framed) capitalism. The glue between them is not just their geography and the economic cooperation it promises; it also is an apparent ambivalence with respect to Russia. There is a strong anti-Russian impulse in the collective consciousness of the population. Stalinism has left its disastrous traces that disavow any policy mentioning 'communism' or 'socialism'. On the other hand, the paradise that a turn to Western capitalism had been promised never happened in these countries. At least some economic cooperation with the

¹⁹ The attempt of the BRICS states to break the power of the US Dollar points in the right direction, but a simple replacement by the Renminbi would not be sufficient. The concept of social value will need a link back to labour time spent in production, see (Hanappi, 2025c).

resource-rich neighbour in the East seems to be prudent. Regimes that aim to consolidate these apparently contradictory moods in civil societies are building an alliance. A third example is the initiative of Canada and France to intensify their connections. This is a history-based language link, but it now extends to a larger approach to form an *alliance of middle-sized countries*²⁰. At the moment, most of these emerging alliances still look peaceful, but with a non-existent international order and its corresponding legal system²¹, the many smaller alliances can easily turn against each other²².

In the next wave, even mid-sized regimes can fall apart - the situation in Africa, e.g. in Sudan, is a frightening example. It has to be remembered that profit cannot only be made by productivity increasing division of labour and trade, but also by brute force, by taking away your neighbour's resources. In this case, it is only the military strength of a tribe that determines its place in the hierarchical order of a region. Military strength needs soldiers equipped with technologically advanced weapons, implying technical progress, which concentrates on killing machines. But soldiers also need food, so a part of the population still will have to work on that. There is no question that the military apparatus will turn its force inward towards the working population to guarantee discipline and a sufficient food supply. The war of tribes led by independent warlords evidently will purge the democratic advances that capitalist evolution in its earlier stages had enabled. The outcome of criminal paramilitary gangs dominating their local environment so far is only a depressing speculation; but it is as rationally possible as the other three speculations.

As these descriptions of the fourth speculation suggest, it is an extension of what has been experienced in the 20th century as classical *fascism*²³. Fascism usually starts within a hotbed of *nationalism*, which evolves from the desire of a militarily organised group within a cultural unit that tries to unify and to streamline its population²⁴. When the exploiting class and its military apparatus start to consider themselves as superior human beings that are legitimated to dominate inferior human beings, exploit them or drive them as a 'foreign race' out of their country, then nationalism has mutated into fascism. Though fascism is first a national phenomenon, it does not prevent the formation of alliances²⁵. Fascist Germany had built the so-called 'little axis' with Italy and the 'big axis' with Japan. The commonalities of fascist alliances typically are racism, dominance of hierarchical military governance, stepwise substitution of market processes by a command economy that conforms to an aggressive, expansionary

²⁰ Canada might somehow become a country associated to the middle-sized countries of the EU.

²¹ International law has been disregarded again and again recently; Donald Trump has just called upon all countries to drop their membership in the International Court of Justice. The situation quickly is getting worse.

²² Compare (Hanappi, 2026c).

²³ In (Hanappi, 2022) classical fascism is explained in its historical context.

²⁴ The unification of Italy by Garibaldi is a typical example of this 'progressive' stage of nationalism. Most anti-colonial movements typically include (progressive) nationalistic characteristics too. Economically they often enable the development of a common, more advanced infrastructure (education, transport, administration, ...).

²⁵ For today's neo-fascist groups in Europe, their national roots in different national cultures - fortunately - are still a reason for their difficulties to unite.

military policy. With larger alliances based on racism or religion, the risk of more severe wars between them certainly rises. All in all, the fourth speculation deserves to be considered as a doomsday speculation.

The four speculations shall serve as a stimulus to imagine possible mixtures of their traits. In each of them, the survival of capitalism in the long run is highly questionable. The least so, probably in the third speculation, which leaves it open whether an updated version of George Orwell's vision can survive for longer. The topic of the third scenario clearly leads to deeper problems, which will be dealt with in the following section.

The epistemological break of perception, interpretation, and language

There is a substantial shift in the way that entities perceive what is going on in their immediate and less immediate environment. The reason for this change is the use of advanced information technology. This groundbreaking transformation of the possibilities of mass communication already started in the 20th century with the introduction of broadcasting. The fast rise of Hitler's fascist movement owed a lot to the distribution of radio equipment, which enabled the presence of the leader's voice in each living room²⁶.

After 1945, the introduction of new hardware devices for mass communication in the households of the Rich North changed global communication behaviour profoundly. The TV enabled and framed how the representatives of government could communicate with their audience, be it prospective voters or devoted subjects. Their communication channel was one-way, from the centre of the ruling class to the people. In democracies, the feedback consisted of elections, while in dictatorships only more or less successful local revolts were possible. From the beginning, the new device was also extensively used by capitalist firms for advertising their products. For them, the feedback materialised as additional demand for their product.

The competition between firms implied a repeated prisoners' dilemma: To prevent a loss of its market share, each firm had to follow the path of increasing advertising expenditure. The exploding flood of advertisements, particularly on TV, hides the ongoing oligopolisation and concentration of the firm structure. On the side of consumers, the oversupply of advertisements has produced a considerable level of aversion, which was met by the marketing divisions with ever more refined psychological sophistication aiming at subconscious levels of consumers. Consumers in the Rich North thus experienced a profound change in the way they processed the information they perceived in their (information-) environment. Most of them might not have noticed this change, but it was happening to them. The flood of advertisements enhanced the ability to ignore the message that it transported on its surface. It became habitual to consider the surface message a lie. To exaggerate and to distort was business as usual for firm behaviour. On the side of firm marketing, this adaptation of

²⁶ See (Hanappi, 2025b)

consumers' reactions was perceived too. It led to a new focus on subconscious, psychologically refined, marketing techniques. The blind mass of consumers had to be steered towards the product without noticing it.

With almost no delay, political entrepreneurs²⁷, the representatives of governing regimes, jumped on the same train. Policy degenerated into a business. The expected revenue is the expected profit that could be made by governing. Profit runs parallel to power, which, for capitalist politics, consists of the right to exploit. Division of exploitation power that only needs to partially result in profit sharing will become necessary if the exploited population is expanding. This in turn leads to different tasks and different job profiles in the power hierarchy. Since Ronald Reagan, the top dogs in governance typically are marionettes, sometimes recruited from B-movie industries or cabaret²⁸. Following the strategies of private firms, *capitalist political entrepreneurs* always try to streamline the internal model-building process of potential voters with the help of media campaigns. The biggest hardware advance generating a push in the intervention in the internal model building of individuals was the introduction of the internet²⁹.

The new electronic media world from then on was quickly becoming global. From big computer centres to small personal devices was just a logical step that left lasting traces in the way the population perceived the world surrounding them. The final cut of this epistemological evolution came with the introduction of another hardware device, the smartphone in 2007.

With this pivotal change in perceptual possibilities, ***the internal model-building process*** of the majority of people in the Rich North and a rapidly increasing share of people in the Poor South ***underwent a dramatic split***. On the one hand, there was an immediately observable local environment, while on the other hand there was an overwhelming global environment, which could be observed with a handheld device. Both environments were linked, no doubt. The local individual, the biological body, needs inputs for its primary metabolism³⁰. But in a global commodity production system with production activities almost completely detached from the points of consumption, the actual links between production and consumption become completely invisible. In other words, the single individual now is ***completely alienated*** from its existence as a member of society, of a commodity-producing human species.

In classical political economy of the 19th century, Marx had distinguished between two types of alienation of workers: (1) The worker is alienated from his or her product

²⁷ Following Schumpeter, an entrepreneur is an agent that turns a set of existing scientific inventions into an application that serves the entrepreneur's exploitative goals (Schumpeter, 1967 (1911)). Hitler's *Volksempfänger* is a perfect example of political entrepreneurship.

²⁸ Trump was a talk show host, Zelenskyy came from cabaret, and even Putin, after his secret service career, developed mostly into a play-actor for sinister dramas. Of course, Stalin-type leaders strictly avoid the suspicion that they are marionettes of more important background rulers.

²⁹ In 1983 the TCP/IP protocol was introduced and from 1991 onwards the internet was accessible for the broad public.

³⁰ Compare (Hanappi,2004) for a detailed description of primary and secondary metabolism.

because it is taken away by the owner of the means of production, and (2) the workers encounter their products again as alienated, when they have to buy them from strangers as commodities. In today's world, **a third, an almost complete type of alienation** is emerging: The population now cannot even find out about its own alienation, because the language which it can use to do so is already manipulated by the interpretation schemes that are centrally distributed by the owners of the information environment. In short, the old emancipatory project of the French Enlightenment has finally failed! If this perspective comes true, complete alienation flows into what has been sketched as rationale speculation 3, Electronic Paper Tigers.

Fortunately, complete alienation has *not* been reached so far; manipulation by forces governing the global information sphere can reach limits wherever individuals with their local sensory apparatus discover contradictions to the 'generally purported view'. If the temperature feels extremely high, it is difficult to convince a person that it is freezing. What can be expected in this situation is that the '*official*' language used in '*generally manipulative interpretations*' will be mistrusted. A parallel type of *local speaking and local thinking* used in local groups might be developing.

At this point, a more *detailed treatment of internal model-building* has to be provided³¹. Thoughts of a human individual are built based on its feelings; the latter are directly linked to their primary and secondary metabolism³². Thoughts are formed by using a language³³, which in turn uses words. A major split in the structure of words is the contradiction between verbs and nouns; compare (Hanappi, 2007). Sentences then are created by combining words to position thoughts as time-bridging³⁴ correlates of (internally or externally) observed perceptions. Changing sets of perceptions, different angles at which images of moving objects are seen and felt, leave their trace in time as different thoughts (sentences). Such bundles of thoughts will always contain contradictions that then will have to be reframed into a (doubt-fraught) *causation structure* to allow for a choice of an action. This causation structure then is an (always preliminary) *internal model* of the individual.

On the way to the build-up of its internal model, the individual is continuously a member of the human species. Models do not fall from heaven as they are not given by pre-existing eternal truths, Gods, or the like. There is a circular movement of exchange of models via language. It goes from a *thought* model in the brain to a *spoken* articulation in the local environment of a *few other individuals*, and sometimes finally to a *written text* that is shared with a considerably *larger part of the human species*. A simplified image of this repeating circular movement is presented in Figure 1.

³¹ For more details compare also (Hanappi, 2020).

³² There is an enormous amount of literature on these links, compare e.g. (Bunge, 2014).

³³ Compare (Chomsky, 2006).

³⁴ The notion of *time* itself was called into question by the famous physicist Carlo Rovelli in his quest to make sense of quantum theory (Rovelli, 1993, 2007).

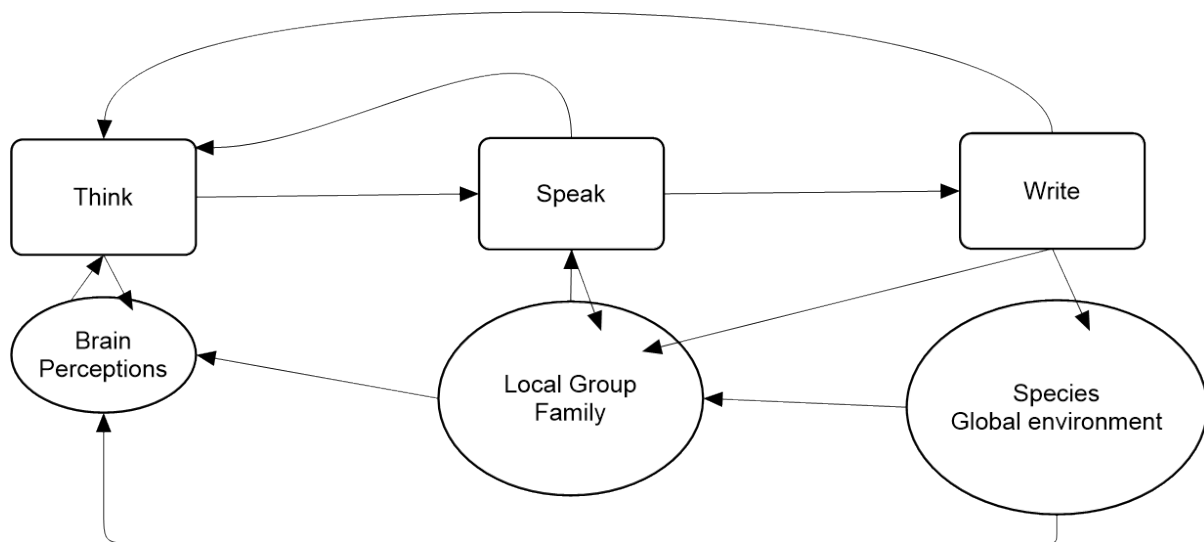


Figure 1: Model-building process

What happened with the global introduction of smartphones was that access to the global environment (managed by the world's media moguls) to each individual brain within an extremely short time became enormously strong. While it is nowadays true that the relevant reproduction possibilities of a single individual (its primary metabolism) indeed hinge mainly on the global conditions of the worldwide division of labour, it is also evident that individuals live (think, speak, write) in local cultures that usually only have inappropriate languages to understand the capitalist-algorithm-driven global dynamics. It therefore is easy for centrally distributed interpretation schemes to enter individual brains directly - even if the observed facts in the local environment clearly contradict them. The *spreading of confusion* has become a general property of modern life.

To a large extent, this is also the secret behind Donald Trump's success in the USA. One could call it *nihilism with respect to increasing knowledge*. It holds that true knowledge, or more precisely *better* knowledge, is not possible at all³⁵. So, why should one care about lies? The second feature supporting nihilism is the speed of expressing opinions on very different issues. It takes time to read and to absorb the content of a good book. To disguise the spread of lies and distorted opinions, it is useful to give the audience no time to digest their content: Quickly jump to a new, unrelated and provoking issue. In a milieu of nihilism, listeners and readers will be dazed. The transformed audience will be ready to imitate and to repeat the short slogans provided by centrally produced interpretation schemes. The third rational speculation is iterated.

But as already mentioned, it cannot be expected that by letting the aspirations of the French Enlightenment be eaten up by Electronic Tigers, it is possible to avoid a new

³⁵ There is the demarcation line to a scientific approach to knowledge production: While scientists insist on their quest to *continuously improve* the knowledge of the species and disavow the existence of a predetermined truth, the modern nihilists would doubt any improvements and state at the same time that what they proclaim is the truth! It's all lies anyway.

contradiction, a **new epistemological break** based on a new kind of language³⁶. Mankind has always used not only different languages, but also different types of languages. Two obvious examples come from the *arts*, in particular music, and from *mathematics*.

Music starts at the smaller circuit in Figure 1, evolving between a small group and the individual³⁷. Note that the journey from left to right in Figure 1 is a rough description from early childhood to adult life too. Indeed, anthropology can explain how the thought of being an individual mainly emerged (in the opposite direction!) as the whole species did grow. Within the local cultural circuits, music and accompanying dance flourished in the different local cultures as a second language enabling the expression of feelings. One can still refer to what is empirically alive in different parts of the world. But there is also an example of a worldwide epistemological break in the not-too-far-away past: The Sixties of the last century produced a global cultural revolution carried mainly by Beat Music³⁸. Evidently, this break did not stop at common musical experience and taste; it had far-reaching political implications, which reverberated in the rise of social-democratic parties in Europe and the Democrats in the USA. Culturally, it was a substantial challenge to the capitalist mode of production, but politically the established left-leaning parties failed. In the end, the fierce conservative reaction of Reagan-Thatcher-Kohl in the Eighties succeeded.

The storyline of the epistemological break in mathematics is even more exciting. Though it started in *Einstein's miraculous year*³⁹, it is still far from being finished today. It is usually articulated as the difficulty of interpreting what quantum mechanics theory really implies. Or, from a more technical perspective, how to reconcile quantum theory and Einstein's theory of relativity. The standard epistemological approach in the structural sciences was to consider an old, finally generalised theory as being explainable as a specially restricted case of the more progressive new theory. This view is also maintained by scientists who want to narrow down the validity of quantum theory to the domain of phenomena with extreme extensions in space and time - approaching zero or infinity. But as already Einstein's concept of curved spacetime and the assumption of the absoluteness of the speed of light show, such a shortcut interpretation is highly unsatisfactory. From 1996 to 2014, the Nobel Prize winner Roger Penrose, together with Max Tegmark, developed a theory that links quantum theory with another phenomenon that is hard to come by: What happens in the human brain, what is consciousness? Though their theory, known as 'Orch-OR' theory, remains criticised by many neurobiologists, there is no doubt that the development of

³⁶ Following the young Wittgenstein, the text should stop here, since ... 'Whereof one cannot speak, thereof one must be silent.' (Wittgenstein, 1922). It is not possible to speak about a new language in using the old language. But the older Wittgenstein (Wittgenstein, 1953) loosened this rigid verdict and considered languages as games, which could exist in different contexts. This is why the text carries on as a kind of evolution of gaming.

³⁷ For the connection between other areas of art and mathematics compare (Du Sautoy, 2025).

³⁸ Compare (Hanappi, 2024)

³⁹ What happened in this year is admirably described by John Stachel (Stachel, 1998).

quantum biology is an important new research direction⁴⁰. In short, formalisation - also known as the structural science of mathematics - is on the move. Far from being the well-set canon of an almost finished scientific discipline children learn in school, formalisation techniques – now including simulation - are approaching an epistemological break too. While the superficial boom in stock markets that Artificial Intelligence boosted by tech-oligarchs' marketing departments will go bust soon, it nevertheless is a signal that simulation support based on incredible amounts of data and extremely fast search and computation techniques can accomplish surprising results *within the limits of existing econometric basics*. Thus, it will stimulate scientists to go beyond these limits to initiate a new epistemological break.

To overcome absolute alienation remains a hope so far. But progress can only proceed from existing *latent* hope towards *manifest* realisation.

The challenge of environmental collapse

If - maybe after a decade - the human species survives the dissolution of the capitalist mode of production, then the next big challenge will already have reached a tremendously dangerous stage: the global environmental collapse. The current dimensions of this collapse are very visible and range from extreme temperatures⁴¹, water scarcity, pollution of air, land, and sea to global pandemics. This is just a small selection. A major problem makes any more precise listing impossible: These catastrophe dimensions are all highly interdependent in non-linear ways. Even if all physical processes were scientifically well-understood, it is becoming increasingly more probable that these non-linear dynamic systems fall into the category of deterministic chaos. Once they are there, human agency built on internal model-building competence enters the wide, rather uncharted field of pattern recognition to *construct systems with new preliminary sets of variables* to identify approaching dangers. The only safe guess seems to be that these models will be *simulation models*; see (Lamperti F., Dosi G., and Roventini A., 2026).

Ignoring for a moment the language problems of an epistemological break in a world after the capitalist mode of production⁴², it is clear that the decision processes in a human society, which still is a commodity-producing society with advanced global division of labour to maintain welfare standards, will have to rely on a substitute for the capitalist algorithm. The second pillar of human organisation that capitalist development has provided besides its first pillar of technological advance - compare

⁴⁰ A more detailed treatment of this topic goes beyond the scope of this paper, but compare (Schild R.E. (editor), Penrose R., Tegmark M., et al., 2017).

⁴¹ For temperatures the evolution of global averages currently seems to be even less dramatic than the amplitude of catastrophic short-run changes.

⁴² Within the context of existing capitalism, proposals for substantial improvements with respect to sustainability have been developed too, compare (Lamperti, Dosi, Roventini, 2026).

(Hanappi, 2026b) - was an attempted framework for global democratic self-governance. Even if this framework was heavily shaken during the death throes of capitalism, it will have remained in collective memory. In the face of difficulties emerging from the limits of availability of environmental resources, or the dangers coming from biological competitors of the human species, what is needed is a direct look at the biophysical dimensions of these challenges. In other words, it is necessary to tear apart the veil of money on which the capitalist algorithm was thriving, and to start with simulation models⁴³ of spacetime quantities that are embedded in the above-mentioned framework of global governance.

This re-orientation of what was known as the investment problem of the capitalist mode of production implies a profound change of the concepts of 'technological advance' and 'innovation' too. They will not be linked to an increase of exploitation any more. They will be carried out in directions determined by **democratically decided need** and not by profit expectations of private firm owner conglomerates. Schumpeter has been the pioneer who started to explore the *disequilibrating* force of a theoretical construct, which he called 'entrepreneur', (Schumpeter, 1964 (1911)). The actual program of this agent was dubbed 'innovation', a sequence of actions that led from the discovery of suitable knowledge provided by scientists via the *new combination* of these pieces of knowledge to the successful introduction of a new product or service to a hopefully promising market. For Schumpeter, the disequilibrating innovation of the entrepreneur was the driving force of the capitalist mode of production. The time innovation disappears will mark the end of capitalism (Schumpeter, 2010 (1947)). For Schumpeter, the type of demand for the innovation – if it was for profits made from economic activity or profit made from war or other directly brutal action – was irrelevant. He was an economist, and not one of the classical British political economists of the 19th century. Since the marginalist revolution of 1874 (Walras, Jevons, Menger), economics was divorced from political theory. Its basic building blocks were human individuals and the links and price signals occurring in market networks. Social classes, their relations and how they were framing (and were framed) the *evolution* of a *political* economy had been excommunicated by mainstream economics⁴⁴. But even during Schumpeter's lifetime, the power of large corporations as well as two World Wars showed that his original concept of welfare-enhancing economic innovation of individual entrepreneurs became an outdated fairy tale. Schumpeter was aware of that and predicted the end of his old-style capitalist image. His rival Keynes had brought back a glimpse of politics by envisaging short-run intervention of a state run by representatives of class compromises. In the face of the Global Economic Crisis of 1928, the stabilisation of capitalism was of utmost importance. Innovation suddenly had to include *social* innovation, an institutionalisation of new forms of relations between classes. But Keynes' macroeconomics was only designed as a short-run remedy and neglected the

⁴³ Simulation certainly will maintain its central part in formalisation, e.g. compare (Scholz-Wäckerle et al, 2023):

⁴⁴ Schumpeter always refused to be called an 'evolutionary economist', though a look at his writings proves the opposite.

exploding influence of 'perception, interpretation, and language', which the advance in electronic media techniques had brought about. In the Thirties, fascist movements took over; politics in its most brutal form was back. Innovation activities concentrated on the war industry.

Today, a comparable narrowing of innovation activities can be observed again. Military circles in states leading wars, or preparing for wars, enforce the development of new weapons of mass destruction. The capitalist mode of production is in severe crisis again. The growth of one country seems only to be possible by the destruction of the power of a rival country. Class compromises are substituted by domestic class wars. But still, the ultimate challenge discussed in this section is the environmental crisis waiting around the corner.

For obvious reasons, innovations during wartime are guided by state institutions. The innovations needed to handle the climate catastrophe will need a guiding hand on the global level – consisting of teams of focused scientists spread – and electronically linked - all over the world⁴⁵. They will have to be embedded in a political framework, which consciously monitors and regulates⁴⁶ the dynamics of the evolution of the global political economy. The latter needs a special type of science, call it evolutionary political economy⁴⁷. The latter can only be one piece in a larger mosaic of a rebuilt structure of scientific disciplines. How that will look like and how it can be brought about is currently unclear: Whereof one cannot speak, thereof one *currently* must be silent.

⁴⁵ This generally global character should not disregard local cultural differences, which often should be given focussed policy support, compare (Basilico S., Cantner U., Graf H., 2023).

⁴⁶ Indeed, regulation and surveillance of acceptable behaviour will have to go hand in hand with parts of economic demand orientation, which can use markets as a sensory system for individual tastes.

⁴⁷ The economic school of 'Evolutionary Economics', (Shiozawa Y., 2004), might already take the first transdisciplinary step by becoming 'Evolutionary *Political* Economy' (Hanappi and Scholz-Wäckerle, 2017).

Literature

- Basilico S., Cantner U., Graf H., 2023. **Policy influence in the knowledge space: a regional application**, The Journal of Technology Transfer, Springer, vol. 48(2), pages 591-622, April.
- Bunge M., 2014, **The Mind-Body Problem: A Psychobiological Approach**, Pergamon Press,
- Chomsky N., 2006, **Language and Mind**, Cambridge University Press, Cambridge, MA, USA.
- Del Rio-Chanona M. et al., 2026, **The Economy as an Evolving Complex System IV**, published by the Santa Fe Institute Press, Santa Fe, USA.
- Du Sautoy M., 2025, **Blueprints: How Mathematics Shapes Creativity**, Basic Books, London, UK.
- Elsner W. and Najmehchi E., 2026, **The Rise of China**. Economic, ⁴⁸Social, and Political Factors of Robust Development, Palgrave Macmillan, London.
- Hanappi H., 2004, **Evolutionary Economic Programs**, invited paper at the 'Ausschuß für Evolutionäre Ökonomie' of the 'Verein für Socialpolitik', Erfurt, July 2003. Published in Studien Zur Evolutorischen Ökonomik IX.: Evolutionsökonomische Grundsatzfragen, Makroökonomik Und Institutionen, edited by Kerber Wolfgang, by Hanappi Gerhard, Beckenbach Frank, Dunn Malcolm H., Eckardt Martina, Meyer Bernd, Rahmeyer Fritz, Schreiter Carsten, Voßkamp Rainer, Weise Peter, and Von Weizsäcker C. Christian, pp. 69-84. Berlin: Duncker & Humblot GmbH, 2004. ([download](#))
- Hanappi H., 2007, **On the Nature of Knowledge**, paper presented at the Ausschuss für Evolutorische Ökonomik (Verein für Socialpolitik) in Münster (Germany), July 5-7, 2007 and published as [MPRA Paper No. 27615](#).
- Hanappi H., 2020, **Perplexing Complexity**. Human Modelling and Primacy of the Group as Essence of Complexity, Review of Evolutionary Political Economy. ([download](#)).
- Hanappi H., 2022, **Political Economy of Europe**. History, Ideologies and Contemporary Challenges, Routledge, London.
- Hanappi H., 2024, **Generation 68: A leisure read**, published [via Amazon](#), [download](#).

Hanappi H., 2025a, **Absolute, global, authoritarian Capitalism**. Approaching the last stop of the Capitalist Algorithm, [Real-World Economics Review, issue no. 110](#).

Hanappi H., 2025b, **Defending Deep Democracy**. Three elections - three surprises - three lessons, [Advances in Social Sciences Research Journal - Vol. 12, No. 12, December 28, 2025, pp. 261-278](#).

Hanappi H., 2025c, **Complex World Money**. A different sign-system of global social value waits at the doors, in Handbook of Complexity Economics edited by Ping Chen, Wolfram Elsner, and Andreas Pyka ([download](#)).

Hanappi H., 2026a, **Long-run Stages of Capitalist Development**. On the granular structure of a mode of production, contribution to the forthcoming Encyclopaedia of Evolutionary and Institutional Economics (Edward Elgar 2026). Extended working paper version: ([MPRA Working Paper Nr. 129013](#)).

Hanappi H., 2026b, [Capitalism. Analytical and Historical Dimensions](#), edited by H. Hanappi, InTech Publishers.

Hanappi H., 2026c, **Stormy Times Ahead**. On Emerging Vassal Structures in Geopolitics. [Advances in Social Sciences Research Journal - Vol. 13, No. 3, 2026, pp. 38-47](#).

Hanappi H., 2026d, **Evolutionary Jump or Exit**. Capitalism cannot survive a Climate Catastrophe, the Human Species Can, opinion paper, forthcoming in JSM Environmental Science and Ecology ([download](#)).

Hanappi H. and Scholz-Wäckerle M., 2017, **Evolutionary Political Economy: Content and Methods**. Forum for Social Economics, [Spring 2017](#).

Lamperti F., Dosi G., and Roventini A., 2026, **A Complex-Systems Perspective on the Economics of Climate Change, Boundless Risk, and Rapid Decarbonization**, chapter 19 in (Del Rio-Chanona et al., 2026, pp. 130-158).

Mao Zedong, 1946, **Selected Works of Mao Tse-tung**, [Vol. IV](#), published by Foreign Languages Press, Peking, China.

Ping Chen, Elsner W., and Pyka A., 2025, **International Handbook of Complexity Economics**, Routledge, London.

Rovelli C., 1993, **On Quantum Mechanics**, Univ. Pittsburgh, Dept. of Physics and Astronomy, Working Paper. ([download](#)).

Rovelli C., 2007, **The Disappearance of Space and Time**, in 'The Ontology of Spacetime' (edited by D. Dieks), Elsevier, pp. 25-36.

Schild R.E. (editor), Penrose R., Tegmark M., et al., 2017, **Consciousness and the Universe**. Quantum Physics, Evolution, Brain & Mind, Cosmology Science Publishers, Cambridge, MA.

Scholz-Wäckerle M. et al., 2023, **Envisioning post-capitalist utopias via simulation: Theory, critique and models**, Review of Evolutionary Political Economy, Springer Nature, December 2026.

Schumpeter J., 1964 (1911), **Theorie der wirtschaftlichen Entwicklung**, Duncker & Humboldt, Berlin.

Schumpeter J., 2010 (1947), **Capitalism, Socialism and Democracy**, Kessinger Publishing, Whitefish, Montana, USA.

Shiozawa Y., 2004, **Evolutionary Economics in the 21st Century: A Manifesto**, Evolutionary and Institutional Economics Review 1(1): 5–47 (2004).

Stachel J., 1998, **Einstein's Miraculous Year**. Five Papers That Changed the Face of Physics, Princeton University Press. ([download](#))

Thompson E.P., 1966, **Making of the English Working Class**, Vintage Publishing, London.

Wittgenstein L., 1922, **Tractatus Logico-Philosophicus**, translation by Frank P. Ramsey and Charles Kay Ogden, published by Kegan Paul, London.

Wittgenstein L., 1953, **Philosophical Investigations**, translation by G.E.M. Anscombe, Blackwell Publishers, London.