

Science and its Tree Histories¹

A ciência e suas três histórias

Roberto Perides Moisés²

ABSTRACT

The process of fragmentation of the community is not a recent phenomenon, a product of capitalist relations, although this is its primacy. A detailed study with a certain bias will lead us to a crucial moment in the formation of communities, of the human and of science and of its process of generalized fragmentation. In our view, the depletion of capital has offered opportunities to reflect on civilizational projects that are currently presented, making evident fundamental elements that are not the most important elements of the Democratic Movement. And in this state of the art, not even our certainty in our understanding of number, numeral, and algorithm will escape critical scrutiny.

Keywords: Logical-Historical Movement; Zone of Proximal Development; Generic Human; Science; Artificial Intelligence; Community; Fluency.

RESUMO

O processo de fragmentação da comunidade não é um fenômeno recente, produto das relações capitalistas, embora este seja seu primado. Um estudo detalhado e com um determinado viés, nos levará a um momento crucial da formação das comunidades, do humano e da ciência e de seu processo de fragmentação generalizada. A nosso ver, o esgotamento do capital tem oferecido oportunidades de refletirmos sobre projetos civilizatórios que se apresentam na atualidade, tornando evidentes elementos fundamentais que os constituíram. Neste percurso, propomos um debate inicial que pode tornar-se um importante viés na crítica do que temos entendido por Movimento Lógico-histórico. E, neste estado da arte, nem mesmo nossa certeza na compreensão que temos sobre número, numeral e algoritmo escaparão de uma revisão crítica.

Palavras-chave: Movimento lógico-histórico; Zona de desenvolvimento proximal; Humano genérico; Ciência; Inteligência artificial; Comunidade; Fluência.

1 Introduction

Before even presenting the introduction to this article, it is essential to make it clear that it was written by two other authors. Luciano Castro Lima was responsible for educational mathematics at the Nova Cultura workers' school

¹ English version by Roberto Perides Moisés. Email: moisesrp@uol.com.br

² Roberto Perides Moisés holds a bachelor's degree in mathematics from PUC-SP. He holds a Master's degree in Science and Mathematics Methodology from FE – USP, and is a Mathematics teacher at a private school in São Paulo. Her master's dissertation entitled *Problem Solving in the Historical/Logical Perspective* (1999) is based on the logical historical development of the concept. He is co-author of the book *Educating with Mathematics. Fundamentals*, published by Cortez Editora in 2016. Orcid: <https://orcid.org/0000-0002-8639-0702>. E-mail: moisesrp@uol.com.br.

(1970 – 2005), located in the eastern part of São Paulo, the former manufacturing area. Although not linked to graduate programs, he contributed, and still contributes, to several master's dissertations and doctoral theses, from the perspective of the Cultural History of Science, and in particular of Mathematics. In his current writings, he has sought to analyze the world conjuncture in a critical way, with reference to the writings of K. Marx and Gordon Childe. Essential Human is co-author of the book *Educating with Mathematics. Fundamentals*, published by Cortez Editora in 2016.

Mention should also be made of the educator Roberto Rocha. Being an engineer by training, his passion for knowledge and humanity led him to graduate in Philosophy at USJT (Universidade São Judas Tadeu – SP) and then a master's degree at the University of São Paulo. As a result of this training and his political activity, he has made important contributions to the study of *Technique*, in particular, its ontology. He is a professor at an ETEC in Niterói – RJ.

Let it be clear that it was on the shoulders of these two giants that my name appears as the author of this work.

Now, let's get to the Introduction!

From our point of view, the theme *Logical-historical movement of concepts: teaching and research* has three fundamental sources:

- (1) The psychological scientific practice (Historical-Cultural Psychology) developed by Vygotsky and his companions from 1924 onwards (USSR);
- (2) The internalist mathematical practice, since the logical-historical movement is determined by the evolution of concepts initiated by Bento de Jesus Caraça (Portugal) in 1936;
- (3) The conceptual practice developed by Alberto Luiz da Rocha Barros (professor at the Institute of Physics of the University of São Paulo, theoretical physicist and assistant to Mário Schenberg) in his course "Evolution of Physics Concepts" taught in the last quarter of the last century.

In the early 1970s, students from the Institutes of Physics and Mathematics created the *Bento de Jesus Caraça Nucleus*, a propositional proposal for a *mathematics education* based on the synthesis of the three sources mentioned above. The conceptual and pedagogical mathematical practice that we develop is based on the *logical-historical movement of concepts*.

Our present contribution to the debate aims to situate it in the current context of accelerated historical transformations that began in the 1990s, intensified from 2014 onwards, reached and currently reaches the degree of world conflagration. In this general and acute crisis, we have identified five fundamental vectors:

- (1) Irreversible decay of imperialist world domination and its general foundations: the world market and international supremacy by the principle of force (permanent war);
- (2) Planetary rise of the Afro-Asiatic productive community;
- (3) The explicitness of millennial antagonisms, hitherto hidden, and which emerge to the light of day in the qualitative leap that began at the end of the twentieth century; such antagonisms point to a rupture of what Marx called *the human race* – the generic man who converses with each homo sapiens specimen, his exclusivity within the *genera* deaf-mutes that animate the living beings that move around the planet. This rupture of the human race took place four millennia ago and had as its epicenter the enlarged surroundings of the Mediterranean Sea. From there it radiated to all mankind, fragmenting it into strange peoples.
- (4) The veil that concealed the cruel reality of the permanent war that had its "big bang" in the fourth millennium before the present one has fallen. This world conflagration broke human history into three parallel and antagonistic sub-histories, each with its derivations in the fields of universal culture, language, and science. The rupture of the human race has caused the disruption of all the founding aspects of the community.

(5) This rupture of the human race that Marx called "estrangement"—men become strangers to each other—happened as the basis of a superstructure that maintained the appearance of presumed human unification with culture, civilization, science, and language emerging on the surface as a universal practice. This visible format of a single humanity has concealed and continues to conceal the inhuman reality of ruptures that make up the black mantle of the collective unconscious, fed and disseminated by *power over the imperialist human being*, which imposes its practice of permanent war and world domination as if it were the only one compatible with the existence of the species. Hence the fifth vector that guides this article: the final decay of imperialism that we are witnessing today opens up the possibility of human reunion, of the integral recovery of our gender broken four millennia ago, of the end of permanent war, and of the universalization of culture, civilization, language (and quantitative language) and Science.

In this article, we develop knowledge as an abstraction derived from the categories of practice. The creation and development of electronically programmable digital machines (EPMD) took place as a qualitative leap in the productive forces, generating a worldwide interaction that had been absent until then in the world war and in the international market. The generalization of the MDEPs mechanism, mistakenly called "Artificial Intelligence" (a neologism that conceals "Artificial Barbarism" – BA), needs to be reversed in its current sense of a weapon of war to that of a generator of a weapon. *Space* → *generalizing time of the genre*. The MDEP and its articulating element, the algorithm, must be inverted from their condition of exact command of class control of man's behavior to become the recuperative productive base of the human race. Mass communication in "real time" at a distance, via the internet, was triggered with a view to the emergence of the single "exact" command from top to bottom that deepens "au trance" the fragmentation of the human race and the estrangement of individual monads. This practice conceals the material existence of the "zones of proximal development" (ZPDs) identified by Vygotsky as the active and articulating principle of educational teaching practice → apprenticeship. ZPDs

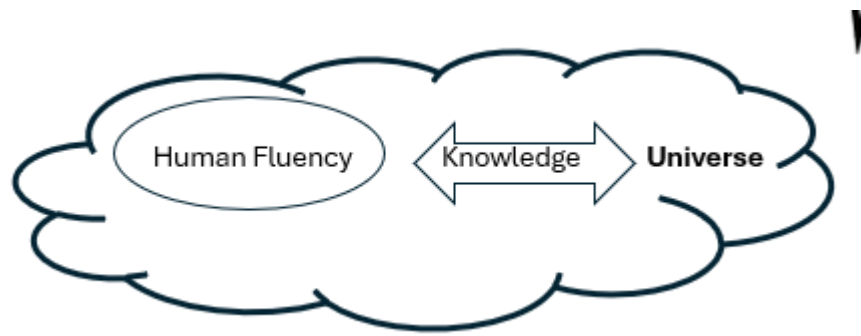
are cells of the productive community and only exist in it. The recovery of the productive community implies the reactivation of the ZPDs that constitute the basis of education \longrightarrow educational learning. Let's unleash educational mathematics so that the humanizing power of the pair *science* \longrightarrow *technology* is carried out in its generality for the end of the permanent war and the strangeness that implements it:

The single, *exact*, top-down command expresses the order desired by a bipedal bodily organism to walk upright, bearer of the self-image of master of the world, within the universal fluency that is, in itself, totally devoid of order, command, will and exactness: *The universe appears to be neither benevolent nor hostile, only indifferent (Carl Sagan).*

The current process of global transformations poses the need to deepen the *logical-historical movement of concepts* based on a critique that has as reference the rupture of the human race four millennia ago. This is the meaning that we must adopt in educational mathematics in order to integrate ourselves into its human unification now underway. In this article, we hope to lay the first foundations of this critique, seeking to identify the human locus of science in the thought that appropriates the materiality of the quantitative variations that guide the vital relations of our species with the universal fluency, the *everything changes* of Heraclitus.

Knowledge is the most universal relationship that the human race (generic man) develops with nature. In creating knowledge, the genus synthesizes two regularities - the vital fluency of the species known man (homo sapiens) and the universal regular fluency.

Figure 1 – Knowledge Dynamics



Source: Authors

Hunger is the sensation that instinctively explains the need for *food*, mobilizing the bodily animation in the search for its satisfaction, *food*. *Unexpected* ↔ *Undetermined* ↔ *Unforeseen*. The only determinate aspect of knowledge is its initiating element: its initial point of departure is, universally, a certain vital need of the human race.

Figure 2 – Necessity and Science



Source: Authors

Hunger is the sensation that instinctively explains the need for *food*, mobilizing the bodily animation in the search for its satisfaction, *food*.

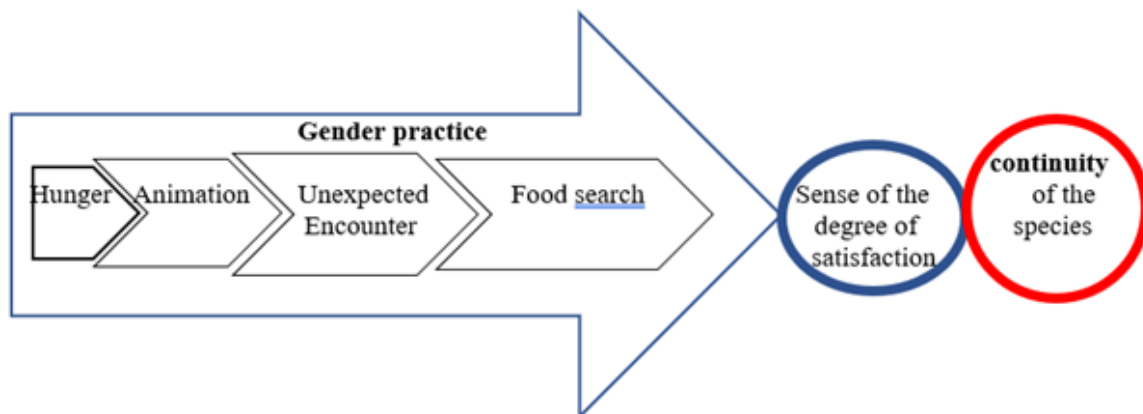
Figure 3 – Hunger-food dynamics



Source: Authors

Hunger determines the need for food, but not food and its consumption. Food is uncertain and totally indeterminate. In the immediately natural condition, there is no menu with a list of dishes for the hungry to choose from. With an aggravating factor: the greater the hunger, *Smaller is the field of choice*. In this inverse relationship, a certain degree of hunger intensity corresponds to a certain degree of choice. This inverse relationship guides the search for food until the unexpected encounter with something that corresponds to it. As long as this "longed-for unexpected" does not happen, the ordered pair *hunger→food* it remains intense, with direction but without meaning; does not constitute a *vector*. When the *discovery* It is that the balance is established between the need and its solution that makes the environment a refuge. The environment is realized as a refuge of the genus when food is found in the "unexpected longed": when a certain plant – root, foliage, fruit, or grain – or an animal of another species, passes the test of the practice of consumption; It is this which will indicate whether hunger has been satisfied and to what degree this satisfaction has occurred. It's the practice *quest→meeting→consumption* of the food that identifies and classifies a particular plant of the vegetation or animal of the refuge as organic matter as food that satisfies hunger.

Figure 4 - Gender practice vector



Source: Authors

The unexpected (but longed-for) encounter of hunger with possible food triggers the practice guided by vital sensations that become significant determinations for the next search for food. That's where the ordered pair *hunger→food* converts to the vector *Food Quest*

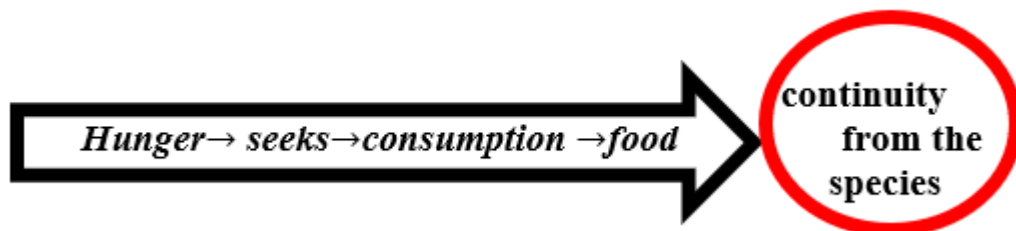
Figure 5 - Hunger-food vector



Source: Authors

The human race brings about this transformation in practice *Collective collection talked about*, an attribute of the *Human speciation call community*. It is in it that the sensations experienced in the action *hunger→quest→consumption→food* they are converted into thought, into the orientation of collective practice. The Sequel *cause→effect hunger→quest→consumption→food* is transformed by the community into a collective action plan, in the vector

Figure 6 - Vector of the continuity of the species



Source: Authors

that becomes an integral part of the community. In it, a collective *action plan* is created that will guide the practice of the next search for food of this kind within a given refuge. The sensations discussed from the common practice are

collectively abstracted and come to constitute *categories of the real in the animation of the genre triggered by the need for food.*

Figure 7 - Practice vector to category



Source: Authors

This practice is called *collecting* and producing is collecting *knowledge*. The *collecting community* practices *communist collecting* where collecting knowledge *is created*. All knowledge of the genre begins in the practice of collection.

Figure 8 - Vector Community and knowledge collector



Source: Authors

The practice of gathering predominates in human history: "For 99.9% of the time, since the appearance of our species, we have been hunters and marauders, wanderers in the savannahs and steppes." (SAGAN, 1996, p. 2)

This Practice generates categories that expand the power of the human being because they generalize man, constituting the *human race* that overcomes animal estrangement. The combined joint collection in conversation combines individuals into a collective force that is recognized as superior. It is the community where each man feels protected, supported and nourished by a real, significant force that the species recognizes as its own. All the collective life that the community puts into each action emerges

explicitly as its own. No atom involved is alien to him. The object made belongs to him, and his qualities do not manifest themselves as intrinsic to the object, as belonging to the nature of the object, but as the result of human nature.

2 Universal fluency

Is the continuous becoming of the real and the permanent change of the totality that is independent of human action, sensations, and intelligence and consciousness. The wise man species, his consciousness and self-image, are inserted and totally determined by the universal fluency composing an aspect and detail of it. Even if it integrates the ever-changing totality, this detail does not exhaust or control it. It is a particular aspect, a detail. Just like human fluency, there are multiple regular fluencies that make up the universe, each tending toward equilibrium that maintains its own existence. However, even if it is a totality of regular fluences, universal fluency is not a regularity since the interactions between regularities are not regularities: if the tendency of each regularity is its material continuity, the general of all regularities is the continuous disequilibrium that destabilizes and breaks the regularities.

2.1 The "Earth" fluency

Our planet is a fluency of internal and external regularities; human practice converts them into *categories* that are synthesized into knowledge:

(1) Inorganic regularity generates the inorganic being, a combined quality→amount of matter that:

- Does not reproduce;
- Does not grow from the internal to the external;
- Continuously moves the astronomical, planetary and atomic dimensions;
- The astronomical dimension determines the climatic fluency of the earth;

- The planetary dimension determines the geotectonic fluency of the Earth
- The atomic dimension determines the flow of the totality of inorganic matter.

(2) Organic regularity generates the organic being, a combined quality→amount of matter that:

- Reproduces;
- Grows from the internal to the external;
- It is cyclical: it is born → Lives → Dies
- To be born is to emerge from the inorganic;
- Living is the fullness of the organic;
- To die is to regress to the inorganic
- The cycle of life makes it clear that the organic being is determined by the inorganic.

(3) Human Regularity generates the human being, a combined quality→quantity of matter that:

- is conscious of its own existence;
- Reproduces through education;
- Produces and creates oneself through ordinary conversational doing;
- It is highly unstable and its continuity depends on the degree of development of consciousness;
- The instability of consciousness makes it explicit that the human being is determined by the Be organic

2.2 The Collapse of the Communist Gathering

Under the determination of the collecting community, the population increase of the species and its spread throughout the planet occurred through the expansion of *zones of proximal development* (Vygotsky).

Zone of proximal development (ZPD) is the distance between the actual level of development, determined by

the ability to solve tasks independently, and the level of potential development, determined by possible performances, with the help of adults or more advanced or more experienced comrades. (VYGOTSKY, 1989, p. 97)

The ZPD is the central aspect of the human generalization that constituted *the Human Race*, the relationship of mutual understanding between the individual human being and the collective human being. The known species *man*, thanks to the communist practice of *doing together the conversed commons*, is the only animal that has reached this degree of qualitative evolution, the generalization of the animate being that consciously connects each specimen with the whole species.

From the twelfth millennium before the present one, there was the collapse of communist collection in the environment of the Mediterranean Sea and its enlarged surroundings. Climate change and geological transformations determined by the end of the last glaciation triggered this collapse in the region of the planet that goes from the Sahara Desert in North Africa to the Arctic Ocean.

Figure 9 - Human Gender Rupture Zone



Source: Edited by Authors; from Pinterest

In this zone, climatic and geomorphological changes have generated three ecosystems that are totally different and separated from each other by barriers and accidents that have prevented the necessary and sufficient interaction for the continuity of the human race and the expansion of its ZPDs. → The productive community, the barbaric war and the world market.

2.3 Route of continuity of the community in the productive quality

The *productive community* was formed in a geographical space determined by long and perennial rivers – in the valleys of the Nile, Tigris-Euphrates, Indus, Yangtze rivers. These valleys were initially productive communities with no links to each other. In them, nations, with a developed crop collection, "learned" to plant with the spontaneous germination that took place in the alluvial deposits brought by cyclical floods.

Figure 10 - Community continuity route in productive quality



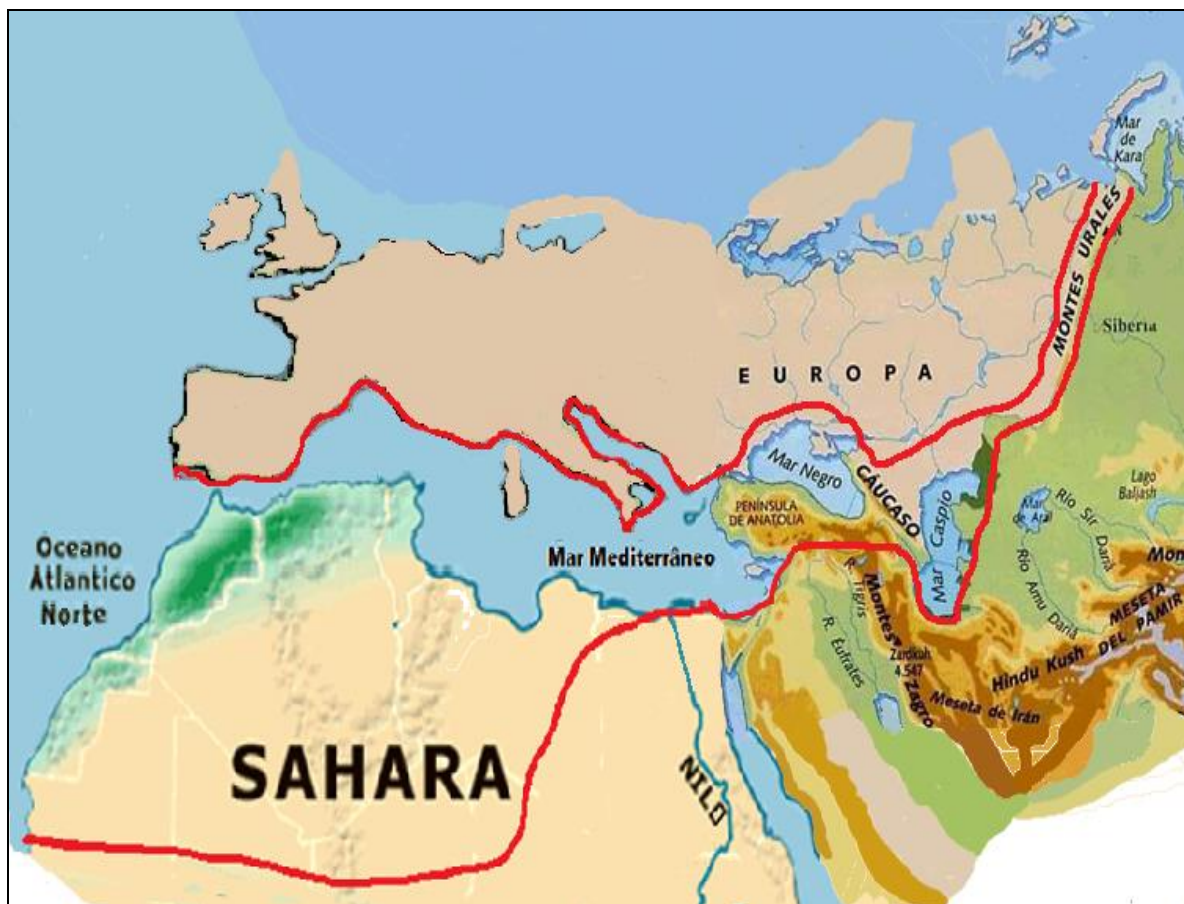
Source: Edited by Authors; from Pinterest

The best student is the one who knows what he wants to know; the peoples of the Sahel, a sub-Saharan region, went in search of solutions to the collapse of the collection and "captured" the cyclical regularity of the Nile's floods, "domesticated" it and created agricultural production, the repetitive "artificial" provocation of the planting cycle. Similar, parallel but disconnected movements took place with the nations that "captured" the water regularities of the Tigris-Euphrates Basin and the Indus and Yangtze valleys. It is the "human" intelligence creating the "artificiality" called *production*, not least because there is no other form of intelligence than the human, nor any other form of artificiality than production, much less any other form of production than that practiced by the community. Productive *practice* has become the active principle of community development. In their later developments, the four productive communities eventually met and combined into a totality that constitutes the *Afro-Asian productive route*.

2.4 The European trapdoor

In the northwestern region of the Euro-Afro-Asian continent, climatic and geomorphological changes have formed a "trapdoor" detached and geographically separated from the rest of the continent by the Atlantic Ocean, the Mediterranean Sea and a long band of natural inorganic features, indicated on the map below by two contiguous red lines, which have their extremes in the North, in the Arctic Ocean, and in the South in the Atlantic Ocean.

Figure 11 - The European trapdoor



Source: Edited by Authors; from Pinterest

The *European trapdoor* was formed in this geographical space determined by this "wall" of mountain ranges and seas that separated the peoples who lived there from the other peoples who remained in Africa or who walked to Asia. The Great Wall of China was built by the producers to defend them from the hordes that attacked them in order to loot the product. The "European wall", on the other hand, was "built" by inorganic nature, isolating the European peoples from the Afro-Asians, and breaking up the human race when it evolves into the productive community. This trapdoor imprisoned the European peoples in a space of increasing degradation, generating acute deprivations that drove human collectives to despair. The inevitable consequence was the conversion of proximity bonds into clashes of dispute for refuges, which were reduced with warming. The approach to understanding (ZDP) gave way to the approach to the selection of the strongest,

unleashing the permanent war of all against all within the European wall. In the glacial period, the surface layer of ice and snow prevented the gathering knowledge from tending towards plant culture. Feeding by hunting has specialized the practice of these peoples. The low knowledge of the planting cycles made it impossible to search for valleys and lakes by the vegetal aspect. These were sought out and identified more by the criterion of hunting and fishing and it was by this same criterion that the peoples arrived at the "hunting of the "human", a practice that would later receive the Latin names *bellus* and German *guerra*. In Afro-Asia, a productive lesson was given by the valleys and water basins. In Europe, "learning" has only changed its object; the slaughter of animals was transferred to the slaughter of "human animals" (Yoav Gallant).

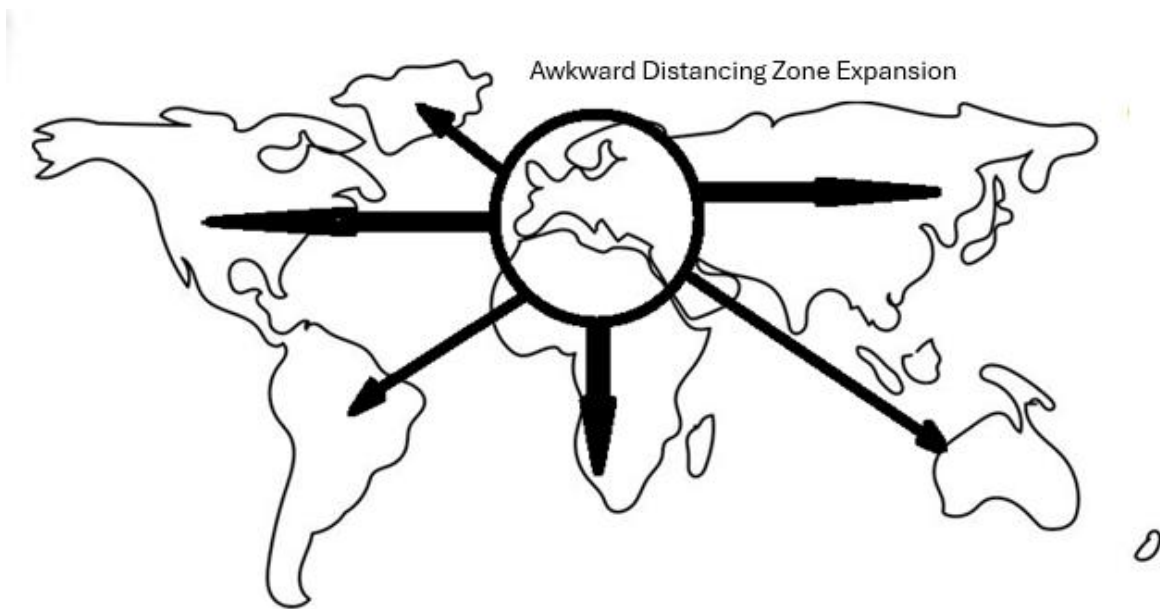
Figure 12 - Asian Production Route



Source: Edited by Authors; from Pinterest

In the European trapdoor, the collapse of gathering expanded hunting with the inclusion of "human" animals in the order of "capture"; the cyclical regularity of the species was "domesticated" as the "art of war" and the repetitive provocation of this art generated the eternal war that remains to this day determining the life of humanity for 12 millennia. Having sharpened to the max from three millennia ago. The *practice of warfare* has become the active principle in the maintenance of the life of the human species, known within the "European trapdoor". Three thousand years ago it overcame the "wall" and took war to the productive route and from there to the entire planet.

Figure 13 - Expansion of Foreign Distancing Zones



Source: Edited by Authors; from Pinterest

The inorganic aspect of universal fluency determined, in this zone, the rupture of the human race, which, from then on, became generalized throughout humanity, constituting the tragedy that, in the present day, threatens to extinguish the species.

2.5 The Mercantile Niche

Among the antagonistic opposites – production vs. war – the third included as an attempt at equilibrium was created: *the world market*. It materialized in the minute detail of the zone of strange distancing, in its center, the Mediterranean Sea, in the unproductive arid territory of the junction of the three subcontinents – Europe, Asia and Africa – and at the point where the two antagonisms oppose each other at the apex, in the territory that is now occupied by the states Lebanon (ancient Phoenicia) and Israel (ancient Judea).

Figure 14 - Afro-Asian Production Route



Source: Edited by Authors; from Pinterest

Judea and Phoenicia formed in the vicinity of the fertile crescent *Nile Valley* → *Tigris Euphrates Basin* facing the narrowest eastern stretch of the Mediterranean. On the one hand, the unproductive land prevented the integration of these nations into the productive route; on the other hand, they were outside the pocket of permanent European war. This double exclusion made it possible for them to develop the intermediary function between the two opposites by the vertex that materialized in the practice of

exchange between Afro-Asian products and European raw materials. Speciation was gestated *Mercantile Exchange* from the fourth millennium before the present one, developing at a rapid pace until creating, in the surroundings of the Mediterranean, the market that outlined what, two millennia later, would constitute the *world market*.

Figure 15 - Cities and trade routes of the Phoenician Jewish Mediterranean market



Source: Edited by Authors; from Pinterest

Mercantile practice became the active principle around the entire Mediterranean, and this sea became the navigation fluid of the balance between European war practice and Afro-Asian productive practice. The intensification of these practices unleashed, in the third millennium, the world war that constitutes history from then until our own. It is the *history of the breakdown of the community into classes, the history of the class struggle, the history of the fragmentation of the human race, and, finally, the history of estrangement among men and of human alienation.*

3 Three Practices, Three Strange Men

The practice is the insertion of *the wise man* into universal fluency. In it, men combine their individual inequalities to generate the collective body ordered internally by the determination of the struggle for life. In the formation of its collectivity, each practice creates its categories, its universal laws that become "universality" in the face of universal fluency. This relative universality informs the insertion in *the panta rei*, guiding in it what should be known and gestating the specific cognitive causal succession of that collectivity in that particular stronghold (environment) composing that particular human refuge:

Figure 16 - Vector Knowledge practice

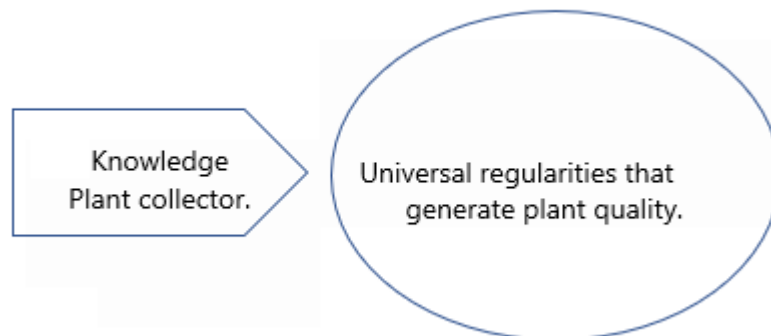


Source: Authors

3.1 Cognitive causal sequence of productive practice

Productive practice is based on the collecting knowledge centered on the plant environment in the search for universal regularities that generate the qualities that satisfy food needs.

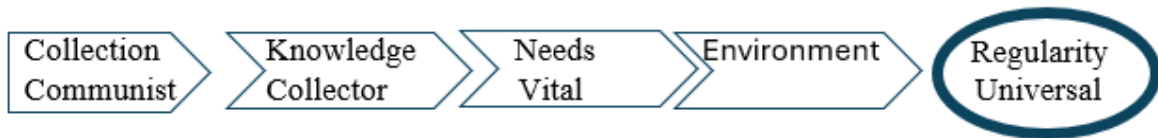
Figure 17 - Vector collection - Universal regularities



Source: Authors

This causal sequence is the initial aspect of the productive practice in overcoming the collection; It is the "capture" of the plant in the collection expanding to the "capture" of cosmic regularity:

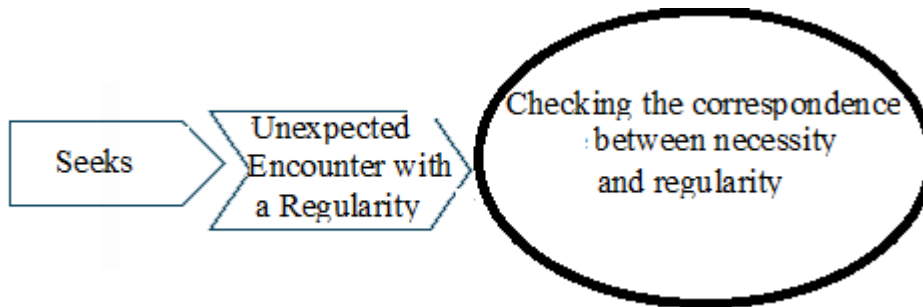
Figure 18 - Vector Communist collection - Universal regularity



Source: Authors

Capture is a *causal cognitive collector sequence*:

Figure 19 – Vector Necessity - Regularity



Source: Authors

Once universal regularity has been captured, the next procedure begins, which separates production from collection - the "domestication" of regularity; Production begins "itself":

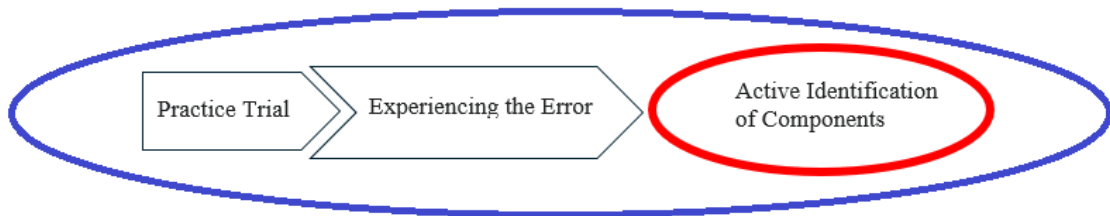
Figure 20 - Capture vector - domestication



Source: Authors

In "domestication" the producer "penetrates" into regularity in order to identify its active internal components by practicing the ordered pair *attempt*→*error*;

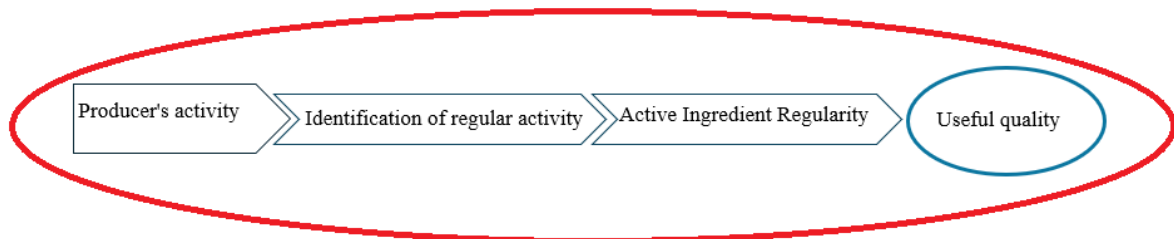
Figure 21 - Vector Practice - Identification



Source: Authors

The Pair *attempt* → *error* it is the central aspect of productive practice; It is the activity of the producer that identifies the active principles of regularity, the categories of the universal real that will become the categories of the practice of human universalization:

Figure 22 - Vector Activity - Utility

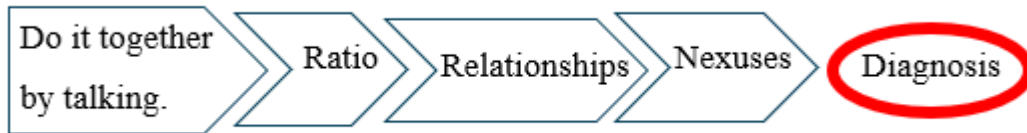


Source: Authors

This penetration into the internality of regularity is the movement *appearance* → *essence* in which the community activates its human power to *Do it together by talking* in the search for the active ingredients that make up a regular material movement. Or *Do it together by talking* It creates rationality, the ability to create relationships between mentally isolated aspects. When these relations correspond to the existing but hidden material nexus, the category called *diagnosis* which refers to the collective cognitive

capacity (or art) to distinguish or discern the inequalities that combine to compose a regularity, isolating them in their specific dynamics.

Figure 23 - Vector Conversation - Diagnosis

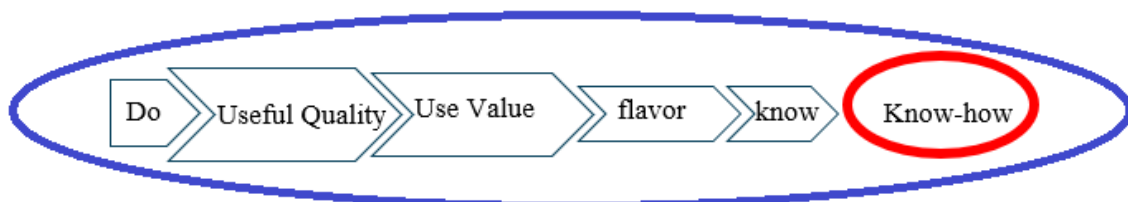


Source: Authors

In this way, the *Collective Doing* It goes through the appearance and arrives at the essence, at the heart of the regular processes. The Ordered Pair *appearance* → *Essence* It is the fundamental and main active ingredient of the production generator of the *know*, the primordial matrix knowledge, which triggers multiple triggering knowledges of various *conceptual movements*. This knowledge, *matrix knowledge*, Structure at the heart of the **Logical-historical movement of concepts** and, consequently, of the educational movement teaching → learning that converts it into language. Its practice produces the goods that will satisfy vital needs; but its reach is much deeper, for it produces the human superior to the collector, *the human being who produces productive knowledge*.

It is *the doing*, generating the *knowledge* through the active organic flavor of the producer, resulting in the *know-how*

Figure 24 - vector do – Know-how

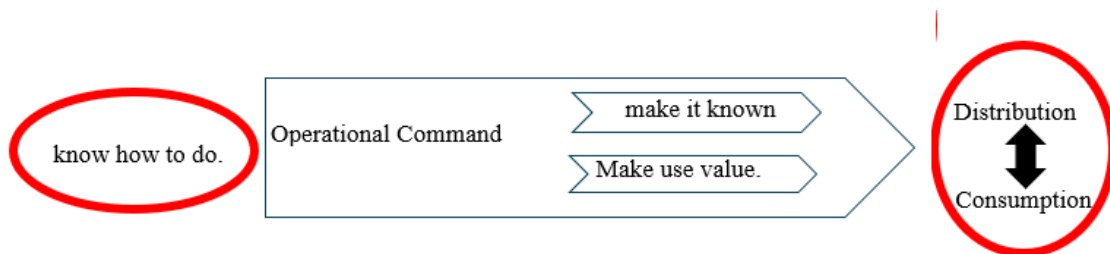


Source: Authors

From the collecting knowledge to the creation of the *know-how*, we have the *production itself*, the creative and central aspect of production. *Production itself* produces the *human being for itself*, the *Power of the human being*. Games are excellent exercises for developing reason; however, they do not guarantee that the reason developed is productive human. The practice of games detached from the *production itself* becomes a hollow, apparent rationality. The same is true of the use of the algorithm detached from the productive community.

Once the know-how is created, the operational aspect of production begins, which has its starting point in the operational command driven by the harmonic pair *Make it known* ↔ *Make Usage Value*: – What, for what and for whom to produce –

Figure 25 - Dynamics of distribution and consumption



Source: Authors

The operational command is the guiding vector of production in its stage of repetitive application of *know-how* in mechanical movement where *the making of knowledge establishes* the triad:

Figure 26 - Knowledge Vector



Source: Authors

And the use-value making establishes the triad:

Figure 27 - Making Vector



Source: Authors

In this broad movement, the community produces *productive knowledge*

Figure 28 - Collective Knowledge Vector - Productive Knowledge



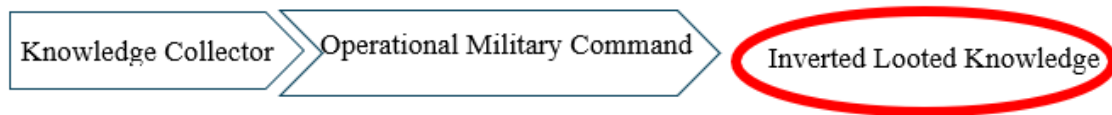
Source: Authors

3.2 Cognitive causal sequence of war practice

War practice begins with collecting knowledge, like all three practices, ignores, through ignorance, productive practice, and jumps straight to the operational command that presupposes *know-how*. And how does this practice obtain the know-how to trigger operational command? Through the active principle of war: the plundering of the product obtained in the hunt for the

human. The looted knowledge is converted, through the operational command of war, into *inverted knowledge* from productive to destructive, from human to inhuman (psychopathic).

Figure 29 - Military Command Vector



Source: Authors

The operational command that does not emerge from productive practice becomes an exact command technique, from top to bottom, without mutual understanding. In order to occupy the human space emptied of the central productive practice – producer of know-how and of the expanded human – the practice of war creates a series of categories that guide the plundering, theft of both the organic inorganic product and the human product; These categories-commands are made and descended into the reality of the species in the form of algorithms that generate "exact" results; Thus, the algorithm is reduced to a mechanism of control and power over the human.

In his critique of the "art of war" Shen Tzu made the anatomy of war practice explicit its fundamental categories:

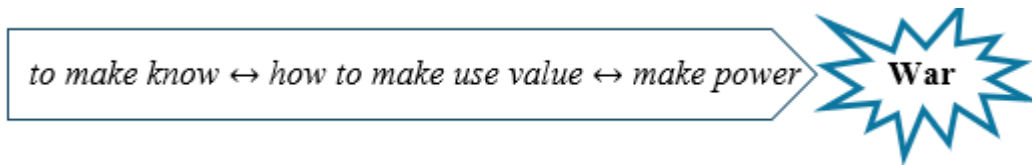
- Categories of Cheating They are categories that encompass all the nuances of the harmonic pair of domination \longleftrightarrow exploitation by lies: deception, profit, gain, advantage, profit, deception.
- Categories of Cunning Force (Reason \longrightarrow Strength) They are categories that encompass all the nuances of the harmonic pair of domination \longleftrightarrow Exploitation by opportunism

These are categories developed for concealment, concealment, and planned anticipation

These are categories created to generate barbaric and inhuman hordes that carry out, with coldness and competence, the hunting, the plunder and the permanent annihilation of the human.

The operational command of the practice of warfare is totally focused on creating *Power over the human*:

Figure 30 – War Vector



Source: Authors

3.3 Cognitive causal sequence of commodity practice

Commodity practice is also part of collecting knowledge, ignoring productive practice by choice in the division of labor. Just like the practice of war, but for a different reason, it jumps straight from the collecting knowledge to the operational command. And where does the *necessary know-how come from*? When he graduated, he came from the division of labor coming from the neighborhood with the productive community. In order to dispatch the product through the mercantile network, the productive community passes on to the operational command of the market the know-how that will be sold. In this transfer, the know-how created in production is converted, through commodity exchange, into *commodity knowledge*.

Figure 31 – Knowledge-commodity vector



Source: Authors

In a similar way to the practice of war, the mercantile operational command becomes a technique of exact command, from top to bottom, without mutual understanding, inverting the communist meaning of know-how to its opposite, estrangement reducing it to an *algorithm*. It is not about the production of know-how; it is only about the operational aspect that starts from the know-how, an aspect that can be reduced by algorithm, which transforms it into a tool of control and mastery of the owner.

In his critique of political economy, Marx made the anatomy of commodity practice that was made in logic

Figure 32 - Vector Making known - Making value

Make it known ↔ *Make use value* ↔ *Make Value*

Source: Authors

in antagonism to human centrality in production

Figure 33 - Vector Know-how – making awareness

Know-how ↔ *Make it known* ↔ *Make use value* ↔ *Raising awareness.*

Source: Authors

In his *Paris manuscripts of 1844* Marx explains this cognitive causal sequence:

The animal produces under immediate physical want, while man produces even free from physical want, and produces only first and truly in his freedom from it; the animal produces itself only while man reproduces the whole of nature; In the animal, its product belongs immediately to its physical body, while man freely confronts his product. The animal forms the product only according to the measure and the shortcomings of the species to which it belongs, while man knows how to produce according to the measure of any species, and knows how to consider everywhere the measure inherent in the object; man also forms the product, therefore, according to the laws of beauty (MARX, 2004. P.121)

In summary, *The animal reproduces, man produces, knows how to produce and knows how to form.* The human practice of producing is not only real and concrete; It's also *Known*; It's not just the *do*; It is also the *know*. It's the *Know-how* and its reciprocal, the *make it known*. Know-how and know-how constitute the core of the *Making Human* in its qualitative differentiation from the *make animal*. Human making is production; The production is *human practice*; Human doing and human practice are different names for the same matter, the *Human Matter* whose core is identity *Know-how↔make it known*. The man who knows how to do and who makes known is the human man (human being), the man *known* what the European "sages" called *Homo sapiens*. The first historical act is the generation of means for the satisfaction of these needs, the production of material life itself (Marx, 1975).

Human history begins when man produces and knows how to produce his material life in himself. Up to this "first historical act" the history of man composes the history of animal life, of organic matter called animality. From it begins the human history, of the human matter called *communism*.

Man's active behavior towards himself as a generic being is possible only because he exposes all his generic forces through the joint action of men as a historical process, behaving towards them as towards foreign objects. (MARX, 2004. P.178)

Marx called *the* "estrangement" of men as a historical process; the "estrangement" that the individual isolated from the community experiences when confronted with the "generic forces" activated by the community (communism) was called *alienation*.

By multiplying the cases of mutual aid, it intensified joint action to the degree of saying something to each other. Necessity created the organ: the underdeveloped larynx was transformed by more distinguishable modulations, and the organs of the mouth gradually learned to pronounce one articulated sound after another. (ENGELS, 1876, p.3)

The "degree of saying something to one another by means of more distinguishable modulations and sounds articulated in sequence" has been given the name Indus (Sanskrit) of *conversation*, which means *to be together with the other*. The "larynx and the organs of the mouth that articulate sounds" received, from Gordon Childe, the name of *bodily equipment*: the organs that man found in his own body to transit from *animality* to *humanity*. The biological science of man has called this specific set of organs the *vocal system (or apparatus)*.

The nature that constitutes human history in its act of emergence is the actual nature of man, it is nature *Anthropological True*. (MARX, 2004. P.163).

The nature that made possible the beginning of human history is the particular regularity of the universal fluency that constitutes the condition of existence of the human species. It is *human nature*, the universal regularity that needs to be produced, reproduced, enlarged, and deepened continually by the community for the perpetuation of the species. "Anthropology" is the name that the European "sages" gave to the "study of man"; Marx points out that this study is, in fact, the identification of the universal regularity that is the condition of our species' existence and that is the true nature of man, the regular detail of the universal fluency that allows our existence.

Productive life appears to man as a means of satisfying a need, the need to maintain physical existence. Productive life is generic life, it is the life that engenders life. In productive life we find the whole character of the species, its generic character, the free conscious life is the generic character of man. Life appears as *Livelihood*. (Marx, 2004. p.21).

Community is the human stuff that makes productive life possible. Detached from the community, productive life is reduced to the apparent animal satisfaction of a need, of maintaining animal existence. It is in

communist practice that productive life emerges as "generic life, as life that engenders life." The community imprints on productive life the "whole character of the species, its generic character." Marx called this "apprehension of the generic character of man," of *the human race as a totality*, consciousness : "free conscious life is the generic character of man."

In the triad *production↔market↔slavery* Marx identified that it is the *production* which mobilizes, aggregates, and combines the animal individualities of man to develop the maximum potency of productive vitality to maintain the universal regularity that keeps the species alive. By reaching this maximum power called *community* The species jumps from animal to human quality, simultaneously generating the nature and matter necessary and sufficient for the continuity of this productive vitality. Consequently, the *production* must be removed from the totality of relations between men, a practice which engenders the *class struggle*.

Continuing with the identification of the generic force of productive vitality, Marx goes on to criticize the relations between men that antagonize production:

Estrangement inverts the relationship to such an extent that man, precisely because he is a conscious being, makes his vital activity, his essence, only a means for his existence. (...) In general, the question that man is estranged from his generic being means that man is estranged from the other, just as each of them is estranged from the human essence. (...) The immediate consequence of man's estrangement from his production, from his vital activity and from his generic being, is the *estrangement of man from man himself*. (MARX, 2004, P.115).

Production is not an organic attribute of man, even though it is a bodily power. This bodily potency *is not in man's individual body, but in his collective body, the community*. Once separated from the community, man becomes a prey to estrangement, to the *emotion of bewilderment when confronted with the magnificent power of the generic force of his human race*. This emotion, when assimilated by consciousness, generates an inversion in the feeling and affection of the estranged man: while the human man

identifies himself as an integral part of the generic being, the estranged man displaces himself from the human essence and identifies it only as a "means of existence". Alienated from the human race, man alienates the other man; conversation loses its character of human totality and becomes a simple exchange of signs, symbols, and information; Doing it together becomes a simple technique of competitive efficiency. The estrangement of man by man himself volatilizes the fundamental alloy which radically combines the individual bodily equipment into the collective bodily equipment which is simultaneously the human race and the powerful generic, productive force of human nature, necessary for the continuity of the species. The loss of this league weakens the community to the point of making it vulnerable to external blows, brittle and tenuous.

If the product does not belong to the producer, an alien power is before him; this is because the collective product belongs to another man who is not a producer. If his activity is martyrdom, then it must be fruition for another and joy of life for another. Not the gods, not nature, only man himself can be this alien power over man. (...) The means by which estrangement proceeds is itself, a practical means. By means of estranged production, therefore, man engenders not only his relation to the object and the act of production; men themselves become mutually strangers and enemies. (MARX, 2004, p. 124).

Then comes the mercantile rupture. The alienated production activated by alienated producers dominated by the exact command of the ruling class is reduced to *work* Doing it together combined by the binomial punishment↔prize foisted by the principle of force.

With the valorization of the world of things, the *devaluation* of the world of men increases in direct proportion. Labor does not only produce commodities; It produces itself as a *commodity*, and this in so far as it actually produces commodities in general. (MARX, 2004, p.114).

Imprisoned in work, the productive force is reduced to the condition of

compulsory activity subject to the binomial identity of punishment↔prize. This binomial is called value, where the punishment is the total absence of value and the reward is the value determined by a graduation measured by work. How do you measure work and, consequently, value? By the average social time of labour necessary and sufficient for the production of a given utility, which Marx calls the human object or *use value*. The estrangement resulting from the withdrawal of the producer from the community converts both labor and all its products into a commodity: individualized producers and products are reduced to value. *The average social time of production of a use-value linked to the utility that will be enjoyed by the consumer.*

At the moment of its genesis, the mercantile relationship emerges as a consequence of the producer's estrangement. This estrangement does not occur within the community, but as a consequence of an external force that violates the community, breaking it into monads that will then be classified by the powerful external force that has violated the community based on the needs and interests of the men who make up this external force. The primal force at work in this direction is slavery. Hence the conclusion that the universal cause of the breakdown of the community into classes is slavery, since slavery, by converting the individual body of man into the property of another man, generates in both communities, the attacker and the attacked, the one that enslaves and the one that is enslaved, the estrangement of the human, the rupture of both communities into, First, a society of estranged men, dehumanized atoms, and then, in the process of classifying these monads, into a class society:

By identifying human nature with mere individuality, man's biological nature is confused with his own, specifically human, nature. For mere individuality requires only means for its subsistence, but not specifically human forms—humanly natural and naturally human, man's biological nature is confounded with his own nature. (MARX, 2004, p. 65).

The antagonistic antitheses to production, slavery and mercantilism,

constituted the ordered pair of counter-production, the practice that made itself operate the estrangement in the direction and direction of the continuous rupture of the community into classes. The class struggle is an inexorable consequence of this rupture and was made in the antagonism between the producing class – the proletariat in all its forms, slave, feudal servile, worker (wage labour), and the ruling class. The class struggle is the historical form that has assumed the basic antagonism between the productive community and the human-hunting operation.

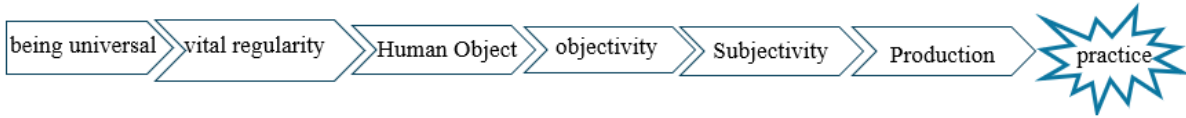
On the theory Marx wrote in 1844:

The question of whether human thought has an objective truth is not a question of theory, but a practical question. It is in praxis that the human being has to prove the truth, that is, the reality and the power, the earthly character of his thinking (MARX, 1982. p.1).

Marx asserts that thought has access to *objective truth* only through practice. Subjectivity derives from objectivity; objectivity derives from the human object. And the human object is produced by the community in the movement in which it develops within the universal fluency, identifying the universal regularities vital to the life of the species and then "capturing" and "domesticating" them for the human mediation of its bodily equipment with the extracorporeal equipment, the non-organic extensions of man's organic body that the human being creates to enlarge and deepen his range of transformation in the universe.

Man does not lose in his object only if it becomes to him as a *human object* or an objective man. This is only possible to the extent that he becomes a social object for him, in which he himself becomes a social being, just as society becomes a being for him in this object (MARX, 2004. p. 159)

Figure 34 – Practice Vector



Source: Authors

Marx called the false consciousness generated by estrangement ideology. Contemplation distances subjectivity from practice. Consequently, it does not interfere with ideology.

Capitalism is the mode of operating production, combining war and mercantile practices in war based on its different operational aspects and the common negation of productive practice. In this fusion, the algorithm remains the exact command, from top to bottom, the result of power and the principle of force.

4 Final thoughts

Final conclusion

To date, the *Historical Logical Movement of Concepts* has been developed without the filter of its essence – *the production of know-how*. With the advent of the productive community, 12 millennia ago, this practice became the active principle of the species' existence. Regardless of the mode of production, the *Production itself*, which Marx called himself *productive force*, It became the principal and fundamental condition of life of the Wise Man. The Ordered Pair *community*→*production* is decisive in this continuity. There is no mode of production that dispenses with it, even if it denies it from every pore. The Practice of War↔It remains for three millennia denying it, fighting it, falsifying it, concealing it because it has, in this continuous rupture, its condition of existence. In the last three millennia, this negation has become dominant worldwide, even if it has not achieved its goal of annihilation of either community or production. On the contrary, it only remained because, in spite of mercantile barbarism, it was forced to develop

the productive force of the species created by the Afro-Asiatic community, even if it was always concealed by the practice of mercantile warfare. Concealment, falsification, and concealment are ways of breaking production with the community. Or The development of the productive force under the domination of mercantile barbarism is totally contaminated by the discontinuities, falsifications, concealments, and dissimulations which this practice has continually unleashed against the productive community. Such ruptures have degraded, marked and contained culture, civilization and science. Inevitably, they are present in language and in the *logical-historical movement of concepts* dominating it, degenerating it, locking it down and falsifying it. The time has come to emancipate the productive force and the conceptual movement from the domination and control of the barbarism that has dominated humanity for three millennia and that currently, as a wounded beast, threatens the existence of the species. With the end of the Production ends the community; And with the end of the productive community, the species ends. This is not going to happen because communist production is "turning" the game. It is time for us to reverse what has been reversed by the Warfare Practice↔in the historical logical movement of concepts. It is not a difficult and mysterious task. Sweeping up the garbage, putting it in biodegradable plastic bags and burying it in the landfill and leaving it to decompose there is a simple and necessary task.

Three millennia ago, the human race was broken into multiple sub-genera; At the center of this multiplicity, in the center of the Afro-Asian-European continent, three antagonistic hegemonic practices were formed: the productive, the warlike and the mercantile. This general rupture triggered ruptures in all aspects of human activity: they formed three divergent subhistories, three parallel cultures, and three totally disparate language vectors. The recovery of the human race consequently involves a profound critique of the German industrial mathematics curriculum, which, since the end of the nineteenth century, has informed the educational mathematics of the world school.

La ciência y sus três historias

RESUMEN

El proceso de fragmentación de la comunidad no es un fenómeno reciente, producto de las relaciones capitalistas, aunque esta sea su primacía. Un estudio detallado y con cierto sesgo nos conducirá a un momento crucial en la formación de comunidades, de lo humano y de la ciencia y su proceso de fragmentación generalizada. A nuestro juicio, el agotamiento del capital ha ofrecido oportunidades para reflexionar sobre los proyectos civilizatorios que se presentan en la actualidad, haciendo evidentes los elementos fundamentales que los constituían. De esta manera, proponemos un debate inicial que puede convertirse en un sesgo importante en la crítica de lo que hemos entendido por Movimiento Lógico-histórico. Y en este estado del arte, ni siquiera nuestra certeza en nuestra comprensión de los números, los números y los algoritmos escapará al escrutinio crítico.

Palabras clave: Movimiento lógico-histórico; Zona de desarrollo próximo; Humano genérico; Ciencia; Inteligencia artificial; Comunidad; Fluidiez.

5 References

ENGELS, F. *O papel do trabalho na transformação do macaco em homem*. 1876. Disponível em: Friederich Engels: O Papel do Trabalho na Transformação do Macaco em Homem (marxists.org)

MARX, K. *O Capital Volume 1*. 3ª Ed. Rio de Janeiro: Civilização Brasileira, 1975.

MARX, K. *Teses sobre Feuerbach*. Lisboa, Portugal: Edições Avante, 1982.

MARX, K. *Manuscritos de 1844*. 13 ed. São Paulo: Boitempo Editorial, 2004

SAGAN, C. *Pálido Ponto Azul: Uma visão do futuro da humanidade no espaço*. São Paulo: Companhia das Letras, 2019.

VYGOTSKY, L. S. *A formação social da mente*. 3 ed. São Paulo: Martins Fontes, 1989

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