Chapter 3
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The Diversion of Human Energy: How Work Has Become a Commodity in Modern Societies

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ABSTRACT

This essay explores the transformation of human energy from a resource for subsistence and social cohesion into a tradable commodity in modern societies. In a universe dominated by the second law of thermodynamics, where entropy is an inescapable constant, life fundamentally challenges this tendency by maintaining order and complexity through free energy. Human energy, generated incessantly and autonomously by the cells of the human body, is not only the vital force sustaining biological processes but also the primary source of energy fueling the complex structures and operations of contemporary societies. This essay proposes an innovative hypothesis and, in theoretical and conceptual terms, proves that the true commodity in modern societies is human energy, not merely human labour. The comparison between human energy and oil as essential commodities offers a new perspective on the centrality of human energy in the global economy. Additionally, the econometric model presented quantifies the contribution of human energy to economic production, highlighting its irreplaceable importance.

Keywords: Free energy; human energy; entropy; thermodynamics; production; global economy; commodification of human Labor; work as a commodity; contemporary societies.

1. INTRODUCTION

In a universe where the second law of thermodynamics reigns, entropy — or the in the tendency towards disorder and chaos — is a dominant force. However, life

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in all its manifestations defies this tendency. Through free energy, life maintains order, structure, and complexity, operating as a bulwark against the rising tide of entropy. Among all forms of life, humans possess a unique ability to channel and utilise this energy not only to sustain biological processes but also to power the gears of the civilisations they have built.

For most of human history, the way we channelled human energy was vastly different from today. Anthropological studies, such as the work of Chaudhary and Salali [1], highlight that much of our cognition and behaviour, are adapted to the hunter-gatherer lifestyle that predominated for much of human evolutionary history. It was primarily directed towards group cohesion, life sustenance, and maintaining balance with the surrounding environment.

Modern societies, with their complex infrastructures, economies, and hierarchies, have an insatiable demand for human energy. But unlike ancient times, this energy is not always used in a way that directly benefits the individual who provides it. Instead, it has become the fuel that powers the vast machinery of the global economy.

This essay aims to delve deeply into the centrality of human energy in contemporary societies. We propose the innovative hypothesis and, in theoretical and conceptual terms, prove that the true commodity in modern societies is not merely human labour, but the human energy generated incessantly and autonomously by the body's cells. We will seek to understand how we reached this point by contrasting modern practices with those of our ancestors and questioning whether the current direction is sustainable or even desirable. Ultimately, the goal is to shed light on the true essence and value of human energy and to reassess how it is utilised in modern societies. Additionally, an econometric model will be introduced to quantify the contribution of human energy to economic production, providing further perspective on its importance.

2. KEY DEFINITIONS

Before exploring the trajectory and impact of human energy in modern societies, it is essential to define some key terms that will be used throughout this essay:

2.1 Energy

Definition: Energy, in its most basic form, refers to the capacity to do work or cause change. It is a quantifiable property that exists in various forms such as kinetic, potential, thermal, electrical, chemical, nuclear, and others. In the context of physics, energy can be transferred between objects or converted from one form to another but cannot be created or destroyed, as established by the law of conservation of energy.

2.2 Free Energy

Definition: Free Energy, often referred to as Gibbs Free Energy in thermodynamics, is the energy available in a system to do useful work under

conditions of constant temperature and pressure. In biological systems, Free Energy is the energy that cells can use to perform work such as growth, movement, and maintaining cellular structure. It is an indicator of a system's equilibrium: a system with low Free Energy is closer to equilibrium, whereas a system with high Free Energy is far from equilibrium.

2.3 Human Energy

Definition: Human Energy refers to the energy produced and used by the human body to sustain its vital functions, perform physical activities, and interact with the environment. This energy is derived from the conversion of nutrients such as carbohydrates, proteins, and fats into ATP (adenosine triphosphate) through metabolic processes.

3. THESIS STATEMENT

Free energy available to individuals is the driving force behind all activity in modern society. In the context of an entropic universe, where disorder is the norm and creating order requires energy, the free energy of people is essential.

1. **Creation**: Every product or service is the result of the free energy available to individuals. Without this energy, innovation and creation would stagnate.
2. **Transport**: The global movement of goods and services depends on the free energy of individuals. It is not just fuels that move transport modes but the free energy that coordinates and directs them.
3. **Commercialisation**: The global market is powered by the free energy available to individuals. Without this energy, the global economy would collapse.
4. **Consumption**: The act of consuming is an extension of people's free energy.

However, this free energy, which should be channelled towards purposes more aligned with our true nature, is being diverted to fuel a machine of production and consumption. In a universe where entropy is the rule, free energy is the exception that allows the creation of order. Just as a car is only started by the ignition key with the driver's energy, modern society is sustained by the energy present in each individual.

Having established the centrality of human energy in society's operations, it is necessary to track demographic evolution and the commodification of human energy.

4. DEMOGRAPHIC EVOLUTION AND THE COMMODIFICATION OF HUMAN ENERGY: AN ANALYSIS OF POPULATION GROWTH FROM 10,000 B.C. TO 2100

During 95% of pre-agricultural human history, the idea of subjugating human energy as a commodity was unthinkable. To understand the crucial role of

human labor in subjugating free energy, it is imperative to analyze human population growth after the introduction of agriculture. The graph below clearly illustrates the disparity in population growth in the post-agricultural period, showing exponential growth after 1800 A.D. It is worth noting that during the pre-agricultural period, comprising 95% of human history, population growth was modest and steady.

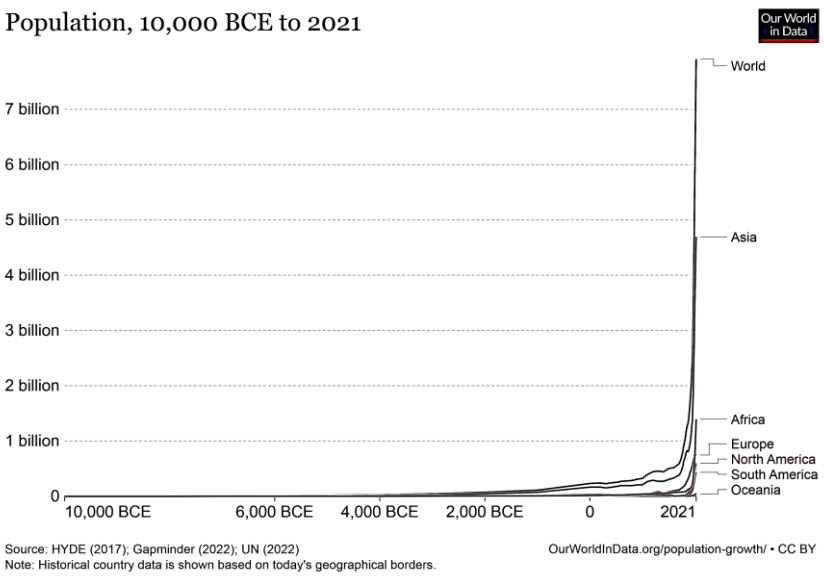

Fig. 1. Evolution of the World Population from 10,000 B.C. to 2100, with UN Projections
Source: Our World in Data [2]

Our World in Data. n.d. Population from 10,000 BCE to 2100, with UN projections. Accessed on September 9, 2023. https://ourworldindata.org/grapher/population [2].

From the dawn of humanity to about 10,000 B.C., it is estimated that the human population remained around 443 million individuals. At that time, human energy was employed organically, aimed at group cohesion, life sustenance, and balance with the environment. Existence in small communities allowed for a balanced use of human energy, combating entropy and preserving order.

During this period, human energy, like that of thousands of other species on Earth, was directed as programmed by DNA, focused on the survival of individuals and group cohesion. This cohesion sustained organisms in numbers usually in the tens. Indeed, groups play a fundamental role in protecting individuals. Group cohesion allows for a more robust defense against external

threats and enhances each member's chances of survival. By collaborating, individuals share resources, knowledge, and skills, increasing the group's capacity to ensure members' balance.

Collaboration and synergy within a group can also provide support and reinforce collective identity, giving individuals a sense of belonging and security. Furthermore, groups can establish norms and guidelines aimed at protecting and maintaining the balance of their members.

Thus, groups have an essential function in protecting individuals by promoting cooperation, sharing resources, and collective defense against external threats, thereby ensuring their members' balance.

Having established the centrality of human energy in society's operations, it is crucial to understand the underlying science governing this energy, especially in the context of entropy.

5. ENTROPY AND FREE ENERGY

The universal tendency for things to become disordered is a fundamental law of physics — the second law of thermodynamics. This law states that in the universe or any isolated system, the degree of disorder always increases. The amount of disorder in a system is quantified as its entropy: the greater the disorder, the higher the entropy. Living cells, by surviving, growing, and forming complex organisms, seem to defy this law. However, they are not isolated systems. Cells acquire energy from the environment and use it to generate internal order, releasing heat in the process. This heat, which is energy in its most disordered form, increases the total system's entropy, aligning with the second law of thermodynamics [3].

Life, in essence, is a dynamic chemical system operating far from chemical equilibrium. For a cell to grow or reproduce, it must acquire free energy from the environment as well as raw materials to perform the necessary synthetic reactions. This acquisition of free energy is fundamental to life. When this process is interrupted, the cell approaches chemical equilibrium and quickly dies [3].

Genetic information is another essential component of life, and free energy is necessary to propagate this information. The specification of information, such as the choice between two equally probable alternatives, has a defined cost in terms of free energy. The quantitative relationship between information and free energy can be complex, but the basic idea is that energy is needed to create order in a system [3].

All cells function as biochemical factories that use the same basic molecular units. For example, all cells require the phosphorylated nucleotide ATP (adenosine triphosphate) as a carrier of the free energy needed to perform a series of chemical reactions in the cell. Although all cells operate similarly, the

details of how they transact small molecules can vary. For instance, while plants can manufacture their own organic molecules using sunlight energy, animals must obtain many of their organic molecules from external sources [3].

Now that we have established the scientific basis of energy and entropy, it is vital to explore how this understanding relates to our perception of property and autonomy over organisms.

6. ORGANISMS AND THE NOTION OF PROPERTY

1. **Biological Origins**: In biological terms, an organism is an individual living entity capable of performing all necessary functions for life. This includes everything from single-celled bacteria to complex humans. At no point in biology is the notion of "property" applied to an organism.
2. **Cultural Construction**: The idea of "property" or "ownership" is a human construct that evolved with the development of complex societies. In many cultures, the idea that a person "owns" their body is an extension of individual rights and personal autonomy. However, this notion is culturally and historically contingent.
3. **Language Limitations**: When we say "my body" or "my mind," we use a linguistic convention to describe the relationship between our consciousness and our physical body. However, this does not imply ownership in the traditional sense. It is more a way of expressing subjective experience.
4. **Ethical and Philosophical Challenges**: The idea of "ownership" over living organisms raises ethical questions, especially when applied to other living beings besides humans. For instance, the notion of "ownership" over animals has been contested by animal rights movements.
5. **Interconnection and Ecology**: From an ecological perspective, all organisms are interconnected and part of complex interaction networks. In this context, the idea of "ownership" or "isolation" of an organism is simplistic and does not reflect the reality of interdependence in nature.

The notion that organisms have "owners" is a simplification and a cultural construct. Instead of viewing organisms through the lens of property, it may be more appropriate and accurate to recognize the inherent autonomy of each living being and its interconnection with the world around it.

Besides understanding our relationship with organisms, it is equally crucial to examine the cultural and historical origins of concepts that shape our relationship with work and dignity.

7. ORIGINS OF THE IDEA THAT "WORK DIGNIFIES MAN"

1. **Social and Economic Structure**: In post-agricultural societies, especially during the Industrial Revolution, there was a growing need for labor. Industrialization brought with it the need for regular and dedicated workers to operate machines and maintain production. The idea that work is

dignifying served as a means to encourage people to join the workforce and dedicate themselves to often monotonous or physically demanding jobs.

2. **Social Control**: The idea can also be seen as a tool for social control. By associating an individual's value and dignity with their work, societies could discourage idleness and promote conformity. Those who did not work for any reason could be seen as less worthy or valuable.
3. **Religion and Ethics**: In some religious traditions and ethical systems, work is seen as a virtue. For example, in Protestant ethics, hard work is often valued as a sign of divine election. This perspective may have influenced the cultural idea that work is inherently dignifying.

That said, examining these origins makes it clear that the idea that "work dignifies man" does not necessarily have roots in universally accepted values as "noble." Instead, it can be seen as a reflection of the needs and priorities of specific societies at specific points in history. In many cases, this notion has been used to justify exploitation or to encourage conformity to economic and social systems that benefit an elite at the expense of the majority.

8. WORK AND HUMAN DIGNITY: A PHILOSOPHICAL AND RELIGIOUS PERSPECTIVE

The relationship between work and human dignity has deep roots in philosophical, religious, and historical traditions. Dignity understood as an intrinsic and inalienable value of the human being, is often associated with the capacity for self-determination, autonomy, and significant contribution to society through work.

In "God and Human Dignity: The Personalism Theology and Ethics of Martin Luther King Jr.," it is explored how Martin Luther King Jr. appropriated and contributed to the intellectual tradition of personalism. This tradition emphasizes a personal God and the sanctity of individuals. King adopted personalism, representing the fusion of his black Christian faith and his commitment to the social gospel, especially in the context of the civil rights struggle in the United States. He believed that the universe is infused with value and that human dignity is central to building the "Beloved Community," a just and equitable society [4].

Additionally, the social work profession in "On Human Dignity and Social Work" highlights human dignity as a key value in its code of ethics. Dignity demands that clients be treated with respect, reflecting the importance of recognizing the inherent dignity of each individual regardless of their occupation or social status [5].

In short, the idea that "Work Dignifies Man" is deeply rooted in philosophical and religious traditions that value human dignity and the significant contribution of work to individual and collective well-being.

The origins of these ideas lead us to reflect on the broader narratives that shape our society and how they influence our perception of human energy.

9. CULTURAL AND SOCIAL NARRATIVES

1. **Construction of Reality**: Societies throughout history have constructed narratives that become the "accepted reality" for their members. These narratives are often shaped by those in power or with influence to serve their own interests.
2. **The Concept of "Social"**: The term "social" and the emphasis on cohesion and social conformity are largely products of post-agricultural societies. In agricultural and industrial societies, social cohesion was necessary to maintain order and ensure efficient production. The idea of "social" was used to emphasize the importance of conformity and cooperation within these systems.
3. **Energy Extraction**: Energy extraction became central to the post-agricultural economy. Human energy was, and still is, channeled to power economic systems. Narratives such as "work dignifies man" serve to justify and perpetuate this system, convincing individuals that their value lies in their ability to work and produce.
4. **The Concept of "Owner**": The idea that individuals are "owners" of their bodies and by extension, their work and energy is another cultural construct. In many traditional and indigenous societies, the concept of individual property, as we understand it today, did not exist in the same way. The notion of "property" and "ownership" is, in many respects, a product of post-agricultural societies.
5. **Continuous Reinforcement**: These narratives are continually reinforced through education, media, religion, and other social institutions. Over time, they become so ingrained that they are rarely questioned.

With an understanding of the narratives that shape our society, we can now delve deeper into the trajectory of human energy throughout history and how it has been influenced by these narratives.

10. THE DIVERSION OF HUMAN ENERGY: FROM BIOLOGICAL NATURE TO SOCIAL CONSTRUCTION

The analysis of human trajectory reveals a significant shift in how human energy is perceived and utilized. For most of human history, humans channelled their energy in a manner aligned with their biological nature, resisting the forces of entropy and maintaining order in an entropic environment. However, the transition to agricultural and subsequently industrial and post-industrial societies triggered a dangerous mismatch in how we view the world and how we utilize our intrinsic energy.

1. **The Nature of Human Energy**: Human energy, at its core, is biological. It is generated through metabolic processes such as ATP production and is used to resist the entropic process, move, think, feel, and interact with the

environment. In pre-agricultural societies, this energy was channelled to maintain cohesion and protect individuals within small groups.

2. **The Diversion of Human Energy**: The transition to agricultural societies represented a shift in how human energy was channeled. Agriculture, with its demands for intensive manual labor and subsequent sedentarization, led to the formation of social hierarchies and resource accumulation. This resulted in social stratification and the emergence of structures that directed human energy towards ends that were not always aligned with individual well-being.
3. **The Construction of "Social"**: The notion of belonging to a "social" is a consequence of post-agricultural societies. Before that, human groups were defined by family and subsistence ties. The complexity of social structures and institutions we see today is a product of the changes brought by agriculture and subsequent social evolutions.
4. **Mismatch in Human Trajectory**: While most species on the planet channel their energy according to their biological nature to resist the forces of entropy, humans in post-agricultural societies began to divert this energy towards other ends, often not aligned with their intrinsic nature.

In summary, the implementation of post-agricultural human societies brought with it a mismatch in how human energy is perceived and utilized. Recognizing and understanding this diversion is crucial to addressing contemporary challenges and reassessing our relationship with energy and the entropic environment.

11. THE COMMODIFICATION OF HUMAN ENERGY IN MODERN SOCIETIES

Since the transition to agricultural and later to industrial societies, the way human energy is utilized has undergone a significant transformation. What was once a collaborative effort for maintenance, subsistence, and genetic code transmission has become a tradable commodity in the market. This section explores the process of commodification of human energy, analyzing the historical, economic, and social factors that led to this change and highlighting the perspective that human energy generated in a constant, autonomous, and counter-entropic manner is the true commodity in modern societies.

11.1 The Transition of Human Energy

In pre-agricultural times, human energy was primarily used for maintenance, subsistence, and genetic code transmission activities. This energy was, is, and always will be generated in a constant and autonomous manner by the human body, resisting entropy without the need for conscious action. The energy generated by living cells, which function as highly efficient and autonomous information processing systems, is fundamental to the viability of life and economic processes. The transition to agriculture introduced the need for intensive manual labor, leading to the formation of complex social structures.

11.2 The Industrial Revolution and the Transformation of Human Energy

The Industrial Revolution marked a significant turning point. Factories required a constant and disciplined workforce that utilized the biological energy of workers derived from the continuous interaction of the body's 37 trillion cells [6]. This period institutionalized the exchange of human energy for wages, formalizing the relationship between biological energy and economic processes. Without this coordinated and self-generated energy [7], matter would not allow life, and consequently, human labor would be unfeasible.

11.3 The Role of Capitalism in the Commodification of Human Energy

Capitalism focused on maximizing profit and productive efficiency, accelerated the transformation of human energy into a commodity. Human energy, essential for the viability of all economic processes and inanimate objects, began to be treated as a commodity. However, traditionally it has been considered merely as "labor" [8], not recognizing the autonomous and incessant nature of biological energy.

11.4 Cultural and Ideological Narratives

Various cultural and ideological narratives sustain the commodification of human energy, such as the Protestant work ethic, which values continuous effort and productivity. However, these narratives do not recognize that without autonomous human energy, any economic process would be unfeasible [5].

11.5 Social and Economic Consequences

The transformation of human energy into a commodity has brought economic advancements but also challenges such as worker alienation. However, the focus here is to understand that without human energy, the maintenance of social and economic structures would be impossible [9].

11.6 Contemporary Reflections

Today, the commodification of human energy continues to evolve, especially with the advent of the digital economy. Digital platforms are transforming the nature of work, often exacerbating workers' precariousness and economic insecurity. It is important to note that there are no social or labor movements that fully understand that what is being traded is human energy and not just labor [2].

11.7 Economic Parameter Comparison with Oil

Just as oil is a fundamental commodity fueling modern economies, human energy can be seen as an essential commodity enabling all economic processes.

The exploitation, use, and integration of oil into the economy depend on coordinated and self-generated energy, without which it would be impossible to enable any economic or life process [2 and 9]. Just as the need for oil can be calculated, it is feasible to calculate human energy in terms of joules and measure both. This comparison highlights the central importance of human energy, similar to the crucial role of oil in the global economy.

11.8 Integration of the Econometric Model

To deepen the theoretical understanding of the importance of human energy in modern societies, we can use an econometric model that quantifies the contribution of human energy to economic production [10,11]. This approach, though presented conceptually, allows us to assess how energy derived from human effort directly impacts economic outputs, such as oil production or energy generation.

11.9 Foundations for the Econometric Model

The econometric model is structured to analyze the relationship between human energy and economic production in the oil production or hydroelectric power plant value chain. The selected variables reflect the complexity and interdependence of economic and biological processes.

- **Dependent Variables:**
- Oil production (barrels per day).
- Energy generated (megawatts per hour).

- **Independent Variables:**
- Number of workers (people).
- Hours worked (hours per day).
- ATP consumption (metabolic energy estimated based on physical effort).
- Work efficiency (productivity measure).

- **Control Variables:**
- Investment in technology (dollars).
- Oil price (dollars per barrel).
- Weather conditions (applicable to hydroelectric power plants).

11.10 Structure of the Econometric Model

The relationship between the variables can be represented by the following multiple linear regression:

$$Y=\beta 0+\beta 1X1+\beta 2X2+\beta 3X3+\beta 4X4+\epsilon Y=\beta 0+\beta 1X1+\beta 2X2+\beta 3X3+\beta 4X4+\epsilon$$

Where:

- YY is the oil production or energy generation.
- $X1X1$ is the number of workers.
- $X2X2$ are the hours worked.
- $X3X3$ is the ATP consumption (representing the physical energy used).
- $X4X4$ is the work efficiency.
- $\beta 0\beta 0$ is the constant of the model.
- $\beta 1,\beta 2,\beta 3,\beta 4\beta 1,\beta 2,\beta 3,\beta 4$ are the coefficients representing the impact of each independent variable.
- $\epsilon\epsilon$ is the error term.

11.11 Evaluation of the Absence of Humans

To understand the impact of the total absence of humans, we analyze the econometric model without the variables related to human energy. When all independent variables ($X1,2,X3,X4X1,X2,X3,X4$) are removed, economic production (YY) is determined only by the constant $\beta 0\beta 0$ and the error term $\epsilon\epsilon$:

$$Y=\beta 0+\epsilon Y=\beta 0+\epsilon$$

11.12 Impact of the Total Withdrawal of Humans

1. **Oil Production or Energy Generation:** Without human intervention, oil production or energy generation depends only on $\beta 0\beta 0$, representing a basic level of production that is insignificant or null in the absence of a workforce.
2. **Interpretation of Variables:**

- **Number of Workers ($X1X1$):** Without workers, oil platforms and hydroelectric plants cease operations.
- **Hours Worked ($X2X2$):** Without hours worked, there is no continuity in production.
- **ATP Consumption ($X3X3$):** Without ATP consumption, there is no physical effort to perform essential tasks.
- **Work Efficiency ($X4X4$):** Without human work efficiency, productive processes are not optimized.

3. **Conclusion of Human Withdrawal:** Without the incessant contribution of human energy, economic production drops to zero. Variables $X1,2,X3X1,X2,X3$, and $X4X4$ are fundamental, and without them, YY becomes insignificant, reinforcing the total dependence of the economy on human energy.

11.13 Final consideration

This econometric model, even presented conceptually, highlights the central importance of human energy for the viability of economic processes. The

withdrawal of humans from the system results in a complete collapse of production, evidencing that human energy is irreplaceable.

In the context of modern societies where the commodification of labor is prevalent, it is crucial to recognize that the true commodity is human energy derived from the incessant production of ATP by the body's cells. Through this analysis, we reinforce that constant and self-generated human energy is the vital force sustaining our existence and the complexity of economic operations. Without it, the economy and life as we know them would be unfeasible, emphasizing the need for a realignment that recognizes and values this essential energy.

12. SUMMARY

The commodification of human energy is a process with profound implications for modern society. Understanding this transformation is crucial to addressing contemporary challenges and reassessing our relationship with energy. Recognizing human energy as the true commodity derived from the incessant interaction of the human body's cells allows us to question and reform the structures that sustain life and economic processes.

13. DISCUSSION

Historical analysis reveals that human energy has always been essential for the survival and cohesion of groups. However, the transition to post-agricultural societies brought a drastic change in how this energy is utilised. Before this transition, human energy was used in a manner that directly benefited the group and the individual. With agriculture and later industrialisation, human energy began to be treated as a commodity essential for powering the machinery of the global economy.

The comparison between human energy and oil highlights a fundamental truth: both are essential for the functioning of modern economies. However, human energy is unique because it is self-generated and incessant. While oil is extracted and has a finite limit, human energy is continuously produced by the body's cells. This fact underscores the importance of reassessing how we value and utilise human energy.

The cultural and ideological narratives that sustain the commodification of human energy need to be re-examined. The Protestant work ethic, for example, values continuous effort and productivity but does not recognise the autonomous nature of human energy. It is crucial that our societies recognise the true source of energy that drives our economies: human energy.

The inclusion of the econometric model in the essay offers a quantitative approach to understanding the contribution of human energy to economic production. The econometric analysis demonstrates that without the incessant

energy of humans, economic production becomes impossible, reinforcing the idea that human energy is irreplaceable.

14. CONCLUSION

The commodification of human energy is a profound and multifaceted process with vast implications for modern society. This theoretical and conceptual essay aims to highlight the centrality of human energy, constant, incessant, and self-generated energy, in sustaining life and the viability of economic processes.

Since the transition to agricultural societies and subsequent industrialisation, the way human energy is utilised has changed drastically. What was once a vital resource for life maintenance and social cohesion has become an essential commodity for powering the machinery of the global economy. This diversion of human energy from its primary purpose to an economic system has created a fundamental dissonance that needs to be recognised and reassessed.

The comparison between human energy and oil illustrates the uniqueness of human energy. While oil is a finite resource that needs to be extracted, human energy is continuously generated by the body's cells. Each of the 37 trillion cells in the human body functions as an autonomous biochemical factory, generating the energy needed to sustain life and resist entropy. Without this energy, organised matter could not exist and, consequently, life itself would be unfeasible.

The econometric model presented further reinforces the importance of human energy by demonstrating that the withdrawal of humans from the system results in a complete collapse of economic production. This fact underscores the need for a realignment that recognises and values essential human energy.

In theoretical and conceptual terms, this essay proves that human energy is the true essential commodity in modern societies. The well-structured, logical, and grounded argumentation presented here validates this hypothesis within the theoretical and conceptual framework. In sum, human energy is the essence of life and the foundation of all economic processes. This theoretical and conceptual essay highlights the need to recognise and value this energy not just as an economic resource, but as the vital force that sustains our existence in an entropic universe. Through this understanding, we can begin to build a society that truly values human energy in all its complexity and importance.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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He obtained his Bachelor of Psychology from Centro Universitário Filadélfia – UNIFIL. His research focuses on the biological structures of the human organism and their relationship with culture and mental disorders. He has published various articles and preprints in Portuguese and English on ResearchGate (https://www.researchgate.net/profile/Joao-Orquiza) since February 2023. At 67, he returned to psychology studies, continuing to explore how evolutionary incompatibilities might explain mental disorders. His works published on ResearchGate, mostly preprints and 2 published articles, have garnered considerable attention, with over 4,160 reads, 712 recommendations, and 2 citations, reflecting a high level of interest and relevance in the academic community.

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