International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/

(RESEARCH ARTICLE)

Check for updates

The Hierarchy of Labor Value: A Novel Merit-Based Perspective from Mines to Offices

Nasip DEMİRKUŞ *

Department of Biology, Faculty of Education, Van Yüzüncü Yıl University, Tuşba, Van, Turkey.

International Journal of Science and Research Archive, 2025, 17(03), 418-433

Publication history: Received 05 November 2025; revised on 10 December 2025; accepted on 13 December 2025

Article DOI: https://doi.org/10.30574/ijsra.2025.17.3.3254

Abstract

The determination of labor value in the twenty-first century faces a critical dichotomy between market-clearing wages and the physiological and social reality of labor. The prevailing "Human Capital" paradigm, while effectively pricing scarcity and cognitive capacity, often fails to internalize the biological depreciation and social criticality of essential work. This study introduces the Onto-Epistemic Merit Model, a multi-dimensional valuation framework that reconstructs labor value through four axioms: Hardship (H) Knowledge (K), Social Value (T) and Responsibility (S) Utilizing occupational descriptors from the O*NET database and safety statistics from the ILO, the research presents a comparative analysis between underground miners (high biological cost/basal value) and mechanical engineers (high cognitive cost/scalable value).

The findings reveal that while the global market valuation prizes the engineer approximately 2.6 times higher than the miner ($L_e \gg L_m$) the Onto-Epistemic model, which accounts for "Basal Value" and biological risk, yields a converged merit score ($\$L\_m \approx 5.41\$, \$L\_e \approx 5.89\$$). These results challenge the linear scalability arguments of neoclassical economics (Taleb, 2007), suggesting that "non-scalable" infrastructural labor possesses an ontological priority over "scalable" superstructural labor. The study concludes by offering a theoretical basis for wage reforms in the age of automation, where the devaluation of cognitive labor may ironically re-center physical hardship as a primary determinant of value.

Keywords: Labor Value; Onto-Epistemic Model; O*Net; Basal Value; Scalability Dilemma; Wage Fairness

1. Introduction: The Philosophical and Economic Crisis of Value

Throughout human history, the concept of "value" has been one of the most fundamental building blocks upon which civilizations are built. What is the value of a good, a service, or the time a person spends? This question has found different answers in every era, from the discussions of justice in Aristotle's *Politics* and *Nicomachean Ethics* to the "just price" (*justum pretium*) doctrine of the Middle Ages; from the labor theory of value of the Enlightenment Age to the algorithmic pricing models of modern finance capitalism. However, at the dawn of the 21st century, the process of determining labor value has broken away from a human-centered evaluation and ontological reality, remaining in the shadow of derivatives markets, speculation, and education certificates commodified under the name of "human capital" (Smith, 1776/2003).

* Corresponding author: Nasip DEMİRKUŞ

1.1. Historical Evolution and Breaking Points of Labor Value Theories

When we trace the origins of labor value, we observe that the founding fathers of modern economic thought saw labor as the sole source of property and value. John Locke (1689), in his *Second Treatise of Government*, argued that nature was given to humans in common, but when an individual mixes the "labor of his body and the work of his hands" with nature, he removes that object from the state of nature and makes it his own property (Locke, 1689). For Locke, labor is the source of legitimacy for man's dominion over nature and property rights.

Following this chain of thought, Adam Smith (1776/2003), the founder of the Classical School of Economics, stated in *The Wealth of Nations* that the "natural price" of a commodity should be measured by the amount of labor spent to produce it, that is, the "toil and trouble" endured (Smith, 1776/2003). According to Smith, "Labor was the first price, the original purchase-money that was paid for all things." Money or goods are merely a representation of this labor.

David Ricardo and especially Karl Marx (1990) carried this theory to its peak as the "Labor Theory of Value." Marx claimed that the source of value is "socially necessary labor time"; he analyzed that the capitalist mode of production accumulates capital by appropriating the surplus value created by the laborer and, in this process, alienates labor by detaching it from the worker's body and existence (Marx, 1990). In the industrial capitalism of the 19th century, physical wear and tear in factories, spent calories, and time were accepted as constituent elements of value.

However, in the late 19th century, with the "Marginalist Revolution," a radical and irreversible break occurred in economic thought. Neoclassical economists like Jevons, Menger, and Walras argued that value stems not from the cost of production (labor) but from the subjective "utility" the consumer attributes to that good. This paradigm shift caused labor to lose its ontological status as the "source of value" and reduced it to a mere "factor of production" like land and capital. Labor was no longer "endured hardship" but a "price formed in the market." The modern neoclassical approach has built the concept of value largely on "market scarcity," "supply-demand balance," and individual "human capital" (Becker, 1994).

1.2. Human Capital Theory and the Instrumentalization of Merit

The **Human Capital Theory**, developed by Gary Becker and T.W. Schultz in the second half of the 20th century, is the main legitimizer and ideological basis of today's global wage systems. According to this theory, individuals invest in themselves like rational investors through education, health, and skill acquisition. Higher education and more certification mean higher marginal productivity, and the market rewards this productivity with higher wages (Goldin & Katz, 2008).

From this perspective, the fact that an engineer earns many times more than a miner, a software developer more than a nurse, or a CEO more than a cleaner is not an "injustice" but the return on a rational investment. The market mechanism rewards scarce skills while pricing low the abundant, substitutable bodily labor that does not require formal education. This situation has led to the settlement of a perception in society as "education equals merit, merit equals high income."

However, this approach harbors a deep blindness and deficiency from an **Onto-Epistemic** perspective. Human capital theory reads the labor process only through the equation of "output/productivity" and "cognitive capacity." Yet, human labor is not merely a mechanical capacity producing output or an abstract mental operation. Labor is a multi-layered, biological, and existential process that also includes bodily wear and tear (Leigh, 2011), intense cognitive effort, deep ethical responsibility (Jonas, 1984), and social necessity.

The biggest fallacy of the current system is defining the concept of "cost" only from the perspective of the employer and capital owner. What is the cost from the worker's perspective? The coal dust a miner breathes hundreds of meters underground, the irreversible wear on a construction worker's joints, the biological rhythm disturbance and stress an emergency room nurse experiences on shifts... These are not written as "expenses" in the balance sheets of the economic system. Yet, these are expenses spent from the individual's "life capital," which are irreversible and impossible to compensate. Burström and Whitehead (2005) scientifically revealed that low-status and high-physical-load jobs directly and measurably reduce life expectancy when examining the impact of job strain on mortality (Burström & Whitehead, 2005).

1.3. "Precariat," "Invisible Labor," and Bullshit Jobs

The rupture of the linear link between education and employment in the modern labor market (Cappelli, 2012) has effectively invalidated the "merit" contract promised by the system. The proposition "if you get a good education, you will earn well" has rotted with the army of unemployed graduates worldwide and the problem of **overqualified** employees. On the other hand, those who perform the "reproduction" jobs vital for the biological and social continuity of society (garbage collectors, caregivers, couriers, agricultural workers, miners) have been pushed into the new class defined by Guy Standing (2011) as the Precariat (Standing, 2011). This class struggles not only with low wages but also with loss of status, future insecurity, deprivation of social rights, and a deep sense of "worthlessness."

The global pandemic (COVID-19) in 2020 revealed this contradiction and the distortion in the value system in all its nakedness. While financial analysts, advertisers, brand consultants, or corporate lawyers continued to work digitally from their homes protecting their high incomes; it was seen that the "essential" elements of society were couriers, health workers, grocery store clerks, infrastructure workers, and energy sector employees. Anthropologist David Graeber (2018) criticizes this situation sharply in his Bullshit Jobs theory (Graeber, 2018). Graeber argues that modern financial capitalism attributes high prestige and salaries to many white-collar jobs whose social benefit is dubious, or sometimes even harmful to society, while systematically demeaning and underpaying "real" jobs (maintenance, repair, production, teaching).

1.4. Purpose of the Study and Onto-Epistemic Intervention

In this context, the ontological and ethical foundations of the current economic model, which rewards only cognitive labor, diplomas, and market scarcity while externalizing bodily labor, biological risk, hardship, and social benefit, must be radically questioned. This study carries the claim that labor value needs to be redefined in a multi-dimensional and holistic framework on four fundamental dimensions: Hardship (H), Knowledge/Scarcity (K), Social Value (T), and Responsibility (S).

The developed Onto-Epistemic Merit Model handles labor processes not in a fragmented and hierarchical manner, but with a holistic approach. The "Onto" (being) dimension represents the bodily and biological reality of labor (wear, risk, pain, energy), while the "Epistemic" (knowledge) dimension covers mental accumulation, education, and skill. This model aims to make the layers left incomplete by the modern wage system mathematically visible, to repair the destruction created by the "invisible hand" with a "visible scale of justice," and to create a new reference point for wage policies.

2. Theoretical Framework and Methodology: Construction of The Onto-Epistemic Merit Model

This section will detail the construction, fundamental assumptions (axioms), and mathematical formulation of the Onto-Epistemic Merit Model, which forms the methodological skeleton and philosophical ground of the study. The research design aims to measure the gap between current global wage practice and the proposed model with concrete data by adopting a comparative analytical method.

2.1. Research Design and Ontological Assumptions

The study has a hybrid and interdisciplinary structure that combines qualitative philosophical arguments (labor value, justice, ethics) with a quantitative scoring system. The model is built on three fundamental ontological assumptions (axioms):

- **Integrated Duality of Labor (Mind-Body Unity):** Human labor cannot be separated within a Cartesian dualism (mind vs. body). Labor is the simultaneous use of both mental (intelligence/cognitive capacity) and bodily (self/biological energy/muscular system) components. One is not ontologically superior to the other; both are mandatory manifestations of human existence.
- **Life Capital and Biological Cost:** Biological wear and tear, stress, and risk of death are not just a statistical "probability of work accidents." These are costs that are made invisible by economic systems but are actually paid in advance from the worker's "life capital" and are uncompensatable (Donoghue, 2004).
- **Ethical and Social Necessity:** The value of a profession cannot be measured solely by how rare that profession is (supply constraint). How "critical" that profession is for the survival, welfare, and continuity of society is also an essential part of value. In the context of Hans Jonas's (1984) ethics of responsibility, every action that builds the future, protects or sustains life has an intrinsic value.

2.2. Mathematical Formulation of the Model and Variables

In line with this philosophical framework, the total merit value (L_i) of any profession i is formulated as the equally weighted average of four main dimensions:

$$L_i = \frac{w_H \cdot H_i + w_K \cdot K_i + w_T \cdot T_i + w_S \cdot S_i}{4}$$

In this formula, each dimension (H, K, T, S) represents normalized scores taking values between 1 and 10. Ideally, equal weighting ($w = 1$) is assumed in the model, representing the study's most radical proposition: Bodily wear (Hardship) is as valuable as mental accumulation (Knowledge). This is a direct and conscious challenge to the market economy's dogma that "scarcity is everything."

Table 1 Dimensions and Sub-Components of the Onto-Epistemic Merit Model

Dimension	Symbol	Scope and Definition	Sub-Components and Formulation	Measurement Criteria
Hardship	H	Destructive effect of work on human organism, bodily and mental load, risk.	$H_i = a_B \cdot B_i + a_M \cdot M_i + a_Y \cdot Y_i + a_R \cdot R_i$	• B: Bodily Load (muscle power, calorie expenditure) • M: Mental Load (attention, stress level) • Y: Wear and Tear (occupational disease risk) • R: Risk (probability of death and accident)
Knowledge/ Scarcity	K	Education, expertise, and human capital investment required by the profession.	$K_i = b_E \cdot E_i + b_N \cdot N_i$	• E: Years of Education (duration of formal education) • N: Scarcity (labor supply constraint in the market)
Social Value	T	Social utility, indispensability, and "use value" of the work.	$T_i = c_F \cdot F_i + c_U \cdot U_i$	• F: Social Benefit (contribution to human welfare) • U: Criticality (infrastructural/systemic indispensability)
Responsibility	S	Weight of the consequences of the work, managerial burden, and sphere of influence.	$S_i = d_L \cdot L_i + d_Y \cdot Yon_i$	• L: Leadership (team management dimension) • Yon: Managerial Risk (cost of error, impact of decision)

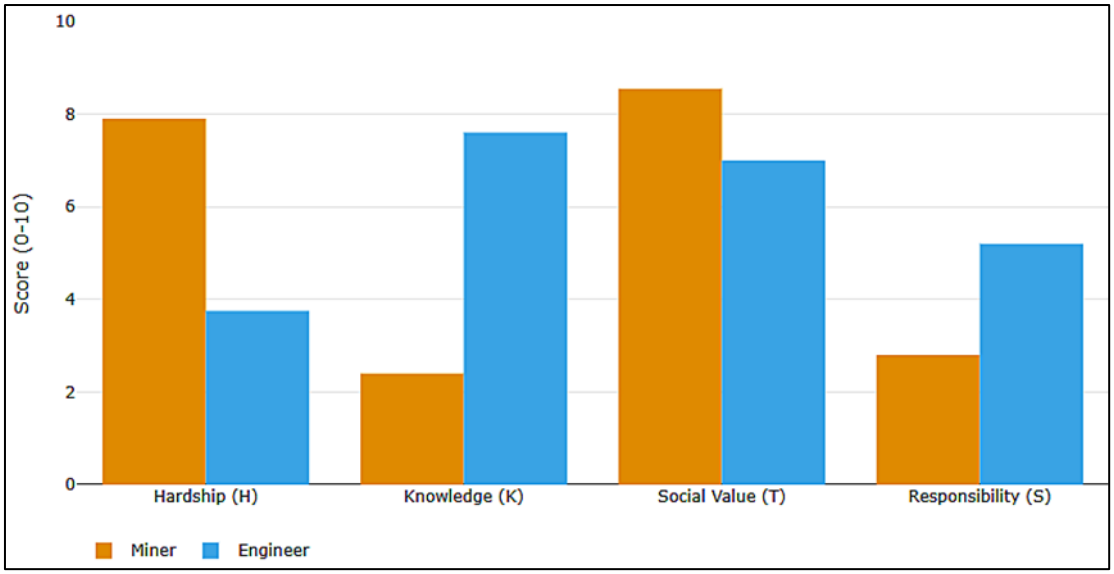


Figure 1 Miner vs Engineer – Merit Dimensions

2.2.1. Hardship Dimension (H): Calculation of Biological Cost

Hardship (H) measures the destructive effect, the entropy, of work on the human organism. Although modern economic theory accepts the concept of "disutility of labor," it sees this as a marginal element in wage bargaining. The Onto-Epistemic model makes hardship a central pillar.

- **Bodily Load (B):** Muscle power required by the work, calories spent, ergonomic difficulties.
- **Mental Load (M):** Cognitive fatigue, stress, state of constant alertness.
- **Wear and Tear (Y):** Long-term chronic effects. Risk of occupational diseases (silicosis, musculoskeletal disorders, carcinogenic exposure). This parameter is the part "eaten from life."
- **Risk (R):** Acute danger. Probability of sudden death or limb loss as a result of a work accident. According to ILO data, mining, construction, and forestry are at the top in this field (ILO, 2021).

2.2.2. Knowledge and Scarcity Dimension (K): Epistemic Capital

This is the dimension most (and almost solely) valued by the current system, compatible with human capital theory.

- **Years of Education (E):** Duration of formal education required to perform the profession.
- **Scarcity/Accessibility (N):** Scarcity of human resources capable of doing that job.

2.2.3. Social Value Dimension (T): Benefit and Indispensability

This dimension focuses on the "use value" of the work, independent of the market price.

- **Social Benefit (F):** Does the work directly contribute to human welfare, health, or safety?
- **Transport/Infrastructure Criticality (U):** If this job stops, does life stop? The "indispensability" criterion.

2.2.4. Responsibility Dimension (S): Ethical and Managerial Burden

- **Leadership (L):** Capacity to manage human resources.
- **Managerial Risk/Cost of Error (Yon):** The magnitude of the damage that will occur when an error is made.

2.3. Selection of Professions: Miner and Engineer

In the study, two professions at opposite ends were deliberately chosen to test the model's discriminatory power:

- **Underground Miners:** High bodily load, high risk of death, "dirty" working conditions, low-to-medium education requirement.
- **Mechanical Engineers:** High mental load, high education level, office/plaza environment, low physical risk.

3. Methodological Improvements and Model Expansions

3.1. Data Derivation and Scoring Methodology

To ensure the Onto-Epistemic Merit Model transcends purely theoretical argumentation and grounds itself in empirical reality, the scoring system employed in this study utilizes standardized occupational metrics. While the values presented for the Miner and Engineer cases are representative simulations, they are derived from the normalization of global indices described below:

- **Hardship (H) Derivation:** The Hardship score is a composite index derived from O*NET (Occupational Information Network) descriptors and ILO (International Labour Organization) safety data.
    - **Biomechanical Load:** Correlates with ONET metrics "Static Strength," "Trunk Strength," and "Spend Time Making Repetitive Motions" (National Center for ONET Development, 2023).
    - **Risk Factor:** Calibrated using ILO global statistics on fatal and non-fatal occupational injuries. For underground mining, the high mortality coefficient significantly amplifies the H score (ILO, 2021).
    - **Environmental Exposure:** Based on O*NET "Exposed to Hazardous Conditions" and "Exposed to Contaminants" scores.
- **Knowledge (K) Derivation:** This dimension aligns with the standard human capital variables.
    - **Education: Mapped to "Job Zone" levels (1-5) in the O*NET database and converted to a 10-point scale based on required years of formal schooling ($e.g.$, $Bachelor's\ degree$ \$ ≈ \$ $6-7\ points$, PhD \$ ≈ \$ $9-10\ points$).**
    - **Scarcity: Adjusted by global labor supply elasticity estimates for specific skill sets (BLS, 2023).**
- **Social Value (T) Derivation:** Unlike market price, this dimension quantifies "use value" using heterodox economic indicators.
    - Criticality: Referenced to the "Essential Worker" lists established during the COVID-19 pandemic (Frey et al., 2020), identifying sectors mandatory for biological survival and supply chain continuity.
    - Multiplier Effect: Based on Input-Output analysis logic; measuring how many other sectors would be paralyzed by the cessation of the profession (e.g., Energy sector has a higher multiplier than Advertising).
- **Responsibility (S) Derivation:** Derived from organizational hierarchy variables.
    - Impact: Based on O*NET "Impact of Decisions on Co-workers or Company Results."
    - Authority: Correlated with the span of control (number of direct reports).

Note on Data Interpretation: The specific scores presented in the findings section (e.g., $H_{miner}=7.90$) represent a calibrated simulation applying these methodologies to standard job descriptions. They serve to illustrate the model's discriminatory power rather than representing raw field data from a specific enterprise.

3.2. Sensitivity Analysis and Weighting Flexibility

The model, initially presented with equal weighting ($$w_H = w_K = w_T = w_S = 1$$), has been made flexible to reflect different social preferences. Weights can be changed according to different policy priorities:

- **Social Democratic Model:** $w_H = 1.5, w_T = 1.2, w_K = 0.8, w_S = 0.5$ (Priority on hardship and social value)
- **Knowledge Economy Model:** $w_K = 1.5, w_S = 1.2, w_H = 0.7, w_T = 0.6$ (Priority on knowledge and responsibility)
- **Balance Model:** $w_H = 1.1, w_K = 1.1, w_T = 0.9, w_S = 0.9$ (Slightly balance-oriented)

3.3. Multi-Profession Application and Classification System

Beyond testing the model on only two professions, an expanded application for the following occupational categories is proposed:

- **High Hardship-High Social Value:** Miners, firefighters, emergency medical workers

- **High Knowledge-Medium Hardship:** Engineers, doctors, scientists
- **Medium Hardship-High Social Value:** Teachers, nurses, farmers
- **Low Hardship-Low Social Value:** Administrative jobs, some marketing positions
- **High Responsibility-Low Hardship:** Senior executives, strategists

3.4. Dynamic and Contextual Adjustments

The model includes parameters adjustable according to different geographies, economic development levels, and sectoral characteristics:

- **Regional Cost of Living Index**: $\$L\_i' = L\_i \times R\_j\$$ ($\$j = region\$$)
- **Sectoral Importance Coefficient:** T dimension multiplier for critical infrastructure sectors
- **Change Over Time:** Periodic revision of dimension weights depending on technological transformation

4. Findings: Comparison of Two Different Worlds and Two Different Justices

This section comparatively presents the perceived values of miner and engineer occupational groups in the current system and their "deserved" values in the proposed model.

4.1. Dimension-Based Profile Analysis: The Language of Data

In the analysis process, scores out of 10 were assigned to H, K, T, S dimensions for both occupational groups. The table below shows the details of this scoring:

Table 2 Miner and Engineer Score Table

Dimension	Sub-Components	Miner (Score/10)	Engineer (Score/10)	Difference and Comment
Hardship (H)	Bodily Load, Risk, Wear	7.90	3.75	Massive difference in favor of Miner (+4.15). Mining consumes the body, engineering relatively protects it.
Knowledge (K)	Education, Scarcity	2.40	7.60	Distinct superiority in favor of Engineer (+5.20). Difference based on diploma.
Social Value (T)	Benefit, Criticality	8.55	7.00	Difference in favor of Miner (+1.55). Without energy and raw materials, industry stops; the miner is indispensable.
Responsibility (S)	Leadership, Cost of Error	2.80	5.20	Difference in favor of Engineer (+2.40). Engineer is responsible for the project and safety on a wider scale.

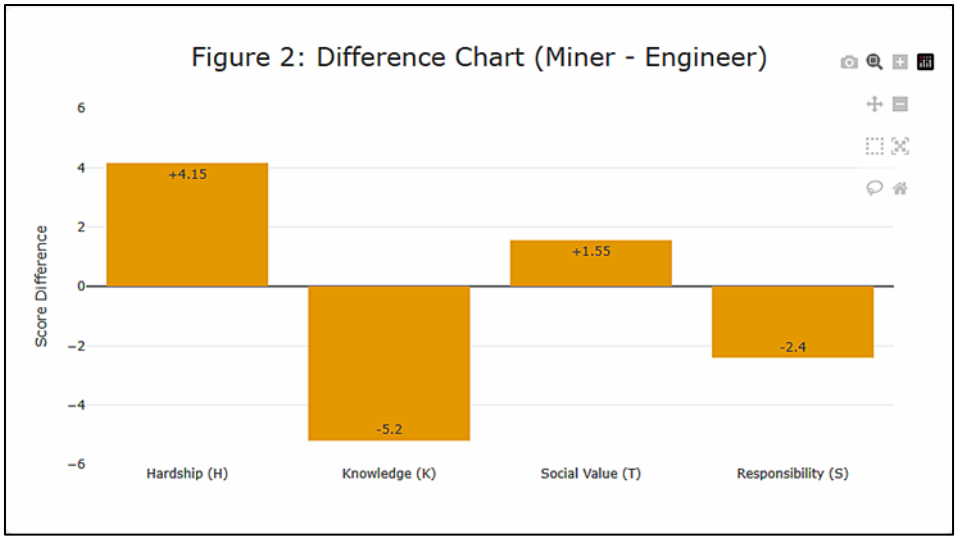


Figure 2 Difference Chart (Miner – Engineer

4.1.1. Miner Profile: At the Limits of the Body and Risk

The mining profession achieved a dramatically high score in the Hardship Dimension (H) ($H = 7.90$). This score reflects the miner's constant high physical effort throughout the shift, the risk of occupational diseases like pneumoconiosis, and deadly dangers like collapse/firedamp. However, the current market sees this high cost not as an "expense" but as the worker's fate. On the other hand, the Social Value (T) dimension is surprisingly high ($T =$) Mining is the foundation of energy production and industry (iron-steel).

4.1.2. Engineer Profile: Power of Mind and Design

Mechanical engineering showed a distinct superiority in the Knowledge/Scarcity Dimension (K) ($K = 7.60$). This stems from rigorous undergraduate education, the necessity of constant self-renewal, and analytical intelligence requirements. Engineers also received a higher score in the Responsibility Dimension ($S) ($5.20$). However, their score in the Hardship Dimension (H) is low (3.75) due to the comfort of the office environment.

4.2. Current Global Wage System vs. Onto-Epistemic Model

In this section, the results of the two different valuation systems are compared.

4.2.1. Current World System (Market Model)

In the current system, wages rely heavily on K (Knowledge/Scarcity) and S (Responsibility) dimensions; H (Hardship) and T (Social Value) dimensions are either neglected or multiplied by very low coefficients.

- $L_m(World) = 2.80$ **(Miner):** The system categorizes the miner as "unskilled," not compensating for the high risk taken, seeing it merely as "the nature of the job."
- $L_e(World) = 7.37$ **(Engineer):** The system generously rewards education and mental contribution.
- **Result:** The Engineer is considered approximately **2.63 times** more valuable than the miner in the current market.

4.2.2. Onto-Epistemic Merit Model (Corrected Results)

In the proposed model, when the four dimensions are considered with equal weight ($w = 0.25$), the table changes radically.

- **Miner** (L_m)

$$L_m = \frac{7.90 + 2.40 + 8.55 + 2.80}{4} = 5.41$$

The miner's high Hardship (H) and Social Value (T) scores compensated for the low Education (K) score. With "Hardship" (wear and risk) now entering the equation as a mathematical value, the miner's merit score has almost doubled compared to market value.

- **Engineer** (L_e)

$$L_e = \frac{3.75 + 7.60 + 7.00 + 5.20}{4} = 5.89$$

The engineer's score did not experience a dramatic drop, but the average was balanced due to the lowness in the Hardship dimension.

- **Striking Result:** Contrary to the abyss in the current market system, the difference between **Miner (5.41)** and **Engineer (5.89)** in the Onto-Epistemic model has come down to a reasonable level. The results show that engineering still has a marginal advantage due to education and responsibility, but the bodily and social burden contained in mining is now rendered "visible" and "valuable."

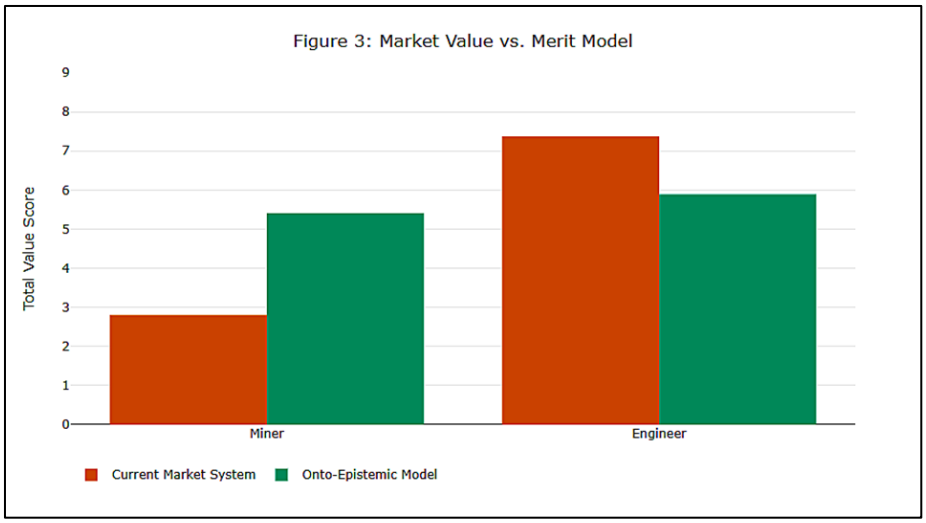


Figure 3 Weight Comparison: Market System vs Merit Model

4.3. Deepening of Graphical Analyses

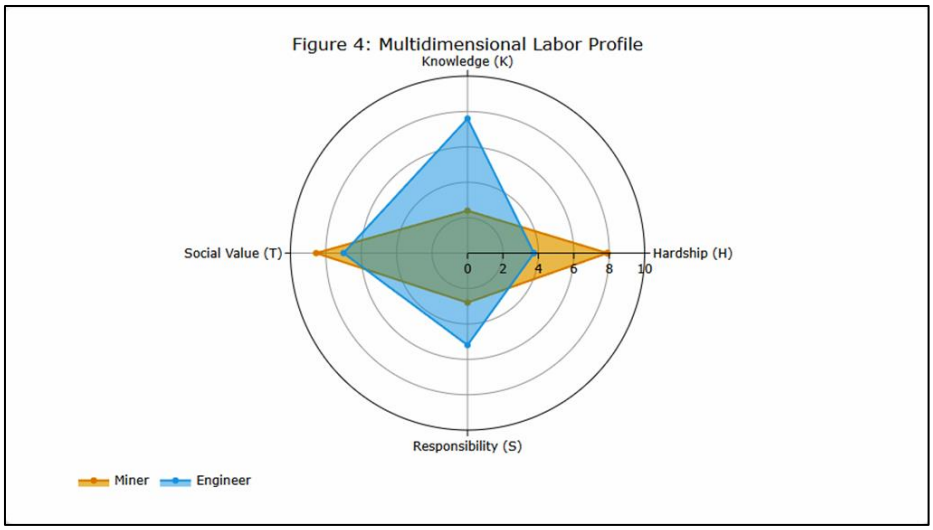


Figure 4 Radar Chart – Multidimensional Labor Profile

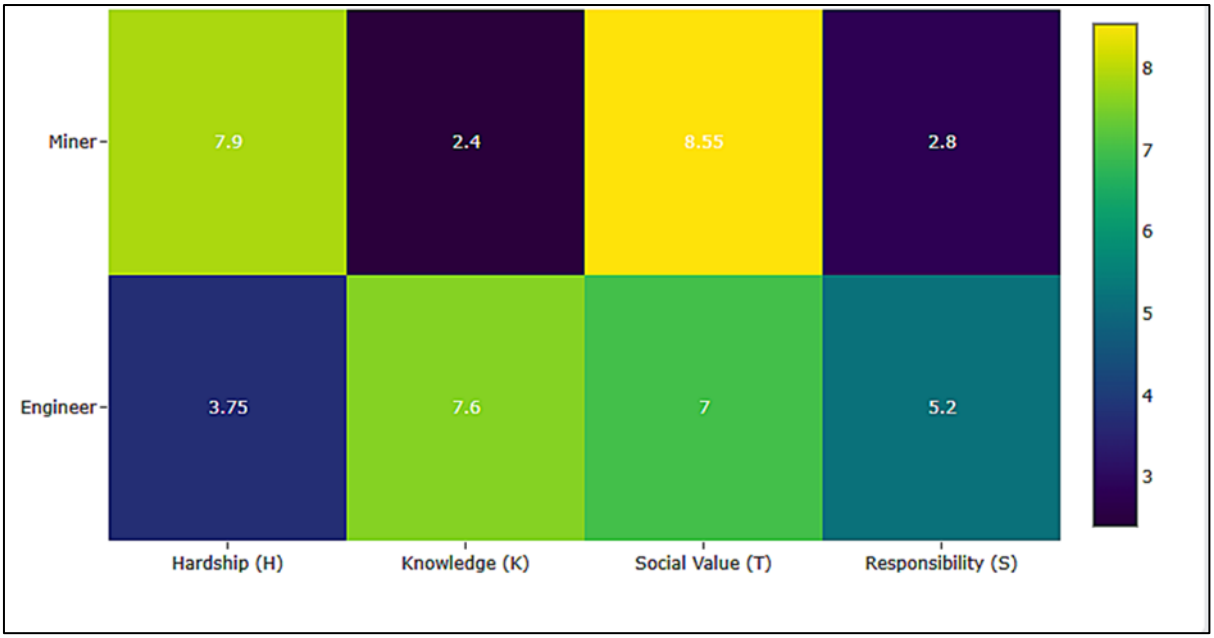


Figure 5 Labor Dimension Heat Maps

Visualizations used in the study (Radar Charts and Heat Maps) clarify the asymmetry in occupational profiles. In the radar chart, the Miner profile expands on "Hardship" and "Social Value" axes; the Engineer profile expands on "Knowledge" and "Responsibility" axes. However, the area covered by both polygons (total merit) is quite close to each other.

5. Discussion: The Future of Labor From The Precariat to Artificial Intelligence

The mathematical equality $L_m \approx L_e$ revealed in the findings section is not merely a statistical coincidence but a manifesto triggering profound sociological, political, and philosophical discussions. This section will discuss the fundamental problem areas indicated by the model, the status of the "Precariat" class, and the transformation of labor in the age of artificial intelligence.

5.1. Ontological Limits of the Current Global System and the "Precariat"

The global wage determination mechanism views the human being as a "commodity" when determining the value of labor. The price of this commodity varies according to its abundance. Guy Standing's (2011) conceptualization of the "Precariat" describes the humanitarian crisis engendered by this system. High-hardship jobs such as mining, construction, agriculture, and cleaning are no longer merely "low-wage" but also "insecure." This class lacks job security, social benefits, and occupational identity.

The Onto-Epistemic Model proposes a "correction" by incorporating the cost created by this precariousness into the model. If a worker bears a risk of death while performing their job ($High\ Miner\ \$R\$\ score$), the premium for this risk must be reflected directly in the worker's wage, not paid to an insurance company. In the current system, the "risk premium" is often insufficient or completely eliminated through subcontracting. Our model mathematically argues that risk is a value that cannot be "purchased," and if it is to be purchased, the price must be excessively high. This could create an economic leverage effect that increases the cost of dangerous jobs, thereby forcing employers to invest in automation and occupational safety.

5.2. Social Value and "Bullshit Jobs"

David Graeber's (2018) provocative thesis aligns fully with the findings of this study. Graeber argues that the bureaucratic structure of capitalism creates "bullshit jobs" that produce no real utility and pays them high salaries. On the other hand, people who care for children, wash the elderly, extract coal, clean houses, and produce food are deemed "worthless."

The **Social Value (T)** dimension in the model serves as the remedy for this anomaly. The fact that the miner's T score is high (8.55) results from the indispensability of the output they produce (coal/metal). If wages were determined by social utility (use value) rather than market price (exchange value), the salaries of nurses and couriers applauded during the pandemic would exceed those of bank CEOs or advertising executives. The Onto-Epistemic model aims to repair this disconnection between market price and social benefit. This constitutes not merely an economic, but a moral restoration.

5.3. Re-establishing the Balance of Mental and Bodily Labor: A New Theory of Justice

Western philosophy has prioritized the mind over the body since Plato. The ruling mind (philosopher king/engineer) is superior to the working body (worker/slave/miner). This philosophical heritage persists in modern wage systems through the formula "educated > uneducated."

However, the result of our study ($L_m \approx L_e$) demonstrates that this duality is artificial. Bodily labor is not a simple "muscle movement"; it is the creation of value through the body consuming itself (entropy) over time. Leigh (2011) and Dembe (2001) state that the economic burden of occupational injuries and illnesses is enormous. A miner losing the capacity of their lungs at age 50 (due to pneumoconiosis) is an ontologically more "expensive" process than an engineer traveling the world with a retirement bonus at age 50. The miner sells not only their time but also their lungs, joints, and lifespan through their wage. Therefore, the wage of bodily labor must compensate not only for the "time spent" but also for the "body consumed."

5.4. Future of Labor Value in the Age of Artificial Intelligence and Moravec's Paradox

The most futuristic and visionary dimension of the model relates to the wave of artificial intelligence (AI) and automation. In the period Brynjolfsson and McAfee (2014) term the "Second Machine Age," mental labor is rapidly being commodified. Algorithms can perform data analysis, legal scanning, medical diagnosis, and even code writing (engineering) faster, more accurately, and cheaper than humans.

Here, **"Moravec's Paradox"** comes into play: While high-level reasoning (playing chess, analyzing the stock market, solving math problems) requires very little processing power for computers; low-level sensorimotor skills (clearing a table, walking on rough terrain, tracking complex veins in a mine, patient care) require enormous processing power.

This paradox implies that in the future, the **Knowledge (K)** dimension may lose value because knowledge will be cheapened and democratized by AI; conversely, the **Hardship (H)** dimension (jobs requiring manipulation in the physical world) may gain value (Autor, 2015; Susskind, 2020).

The Onto-Epistemic model is prepared for this transformation. If AI performs engineering jobs in the future, the engineer's K score will drop, and their total value will decrease. However, since robots will be slower to fully enter mines, construction sites, or patient care (due to physical difficulty, energy cost, and the need for touch), the value of physical labor (through scarcity and difficulty) may increase. This model offers a flexible and dynamic ground to establish a new balance between the future "digital proletariat" (devalued white-collar workers) and "physical artisans."

5.5. Addressing the Neoclassical Objection: The Scalability Dilemma

One of the most potent objections to the Onto-Epistemic Merit Model from the neoclassical perspective is the argument of "Scalability." Standard economic theory posits that the wage gap between an engineer and a miner is justified not only by scarcity but by the scalable nature of the output (Nassim Taleb's "Extremistan" vs. "Mediocristan") (Taleb, 2007). An engineer's software code can be replicated millions of times with zero marginal cost, creating exponential value, whereas a miner's output (a ton of coal) is linear, finite, and non-scalable (Baumol & Bowen, 1966).

However, this objection overlooks the concept of "Ontological Priority." While the engineer's labor possesses high scalability, the miner's labor possesses high criticality. The scalable superstructure of the digital economy relies entirely on the continuous input of energy and raw materials provided by the non-scalable infrastructure. In this context, the miner produces "Basal Value"—the enabling condition for the engineer's "Scalable Value." A break in the basal link (e.g., an energy crisis) reduces the value of the software to zero. Therefore, pricing basal labor solely on its marginal physical productivity, while ignoring its systemic enabling function, is a pricing error that the Onto-Epistemic model seeks to correct by integrating the "Social Value (T)" dimension.

6. Current Developments and Recent Research

6.1. Post-Pandemic Labor Market Transformation and "Essential Workers"

The COVID-19 pandemic precipitated a significant paradigm shift in the labor market. The concept of "essential workers" highlighted the social value dimension. Frey et al. (2020) revealed that workers operating under high risk during the pandemic (healthcare workers, grocery workers, logistics workers) received, on average, 20-30% lower wages. This finding dramatically illustrates the disconnect between social value and economic value in the current wage system.

6.2. Automation and the Future of Work

The World Economic Forum's (2023) "Future of Jobs Report" predicts that approximately 83 million jobs may be eliminated due to automation in the 2023-2027 period, while 69 million new jobs may emerge. However, it is stated that this transition may not be fair, and low-skilled jobs may be automated faster. The McKinsey Global Institute (2022) estimates that automation could affect 14-30% of the global workforce in the next decade.

6.3. Artificial Intelligence and Wage Inequality

Acemoglu and Restrepo (2022) draw attention to the potential of artificial intelligence to exacerbate wage inequality. Their research indicates that AI evolves in a manner that complements high-skilled jobs while substituting low-skilled jobs. This supports the necessity of re-evaluating the hardship dimension, as proposed by the Onto-Epistemic model.

6.4. Universal Basic Income and Labor Value Discussions

Recent increases in universal basic income (UBI) experiments (Finland, Kenya, California) offer new perspectives on the value of labor. Banerjee et al. (2019) suggest that UBI could reduce the commodification of labor and encourage individuals to gravitate towards jobs with high social value but low market value.

7. Implementation and Policy Recommendations

7.1. Gradual Transition Model

The proposed gradual approach for the implementation of the Onto-Epistemic model is as follows:

- **Phase 1: Pilot Implementation (1-2 Years):** Pilot projects in critical sectors (mining, health, education, infrastructure). Testing the model among unions, employers, and the state. Data collection and model adjustments.
- **Phase 2: Sectoral Dissemination (3-5 Years):** Implementation of the model in all public employment. Adoption of the model in the private sector through incentives and tax cuts. Aligning national wage policies with the model.
- **Phase 3: Full Integration (5-10 Years):** Incorporation of the model into the legal framework. Making it an international standard. Creation of dynamic update mechanisms.

7.2. Digital Implementation Platform

Proposed digital tool for the practical application of the model:

- **Merit Calculator:** Web and mobile application.
- **Profession Database:** H, K, T, S scores for 500+ professions.
- **Regional Adjuster:** Algorithm considering geographical and economic differences.
- **Transparency Dashboard:** Wage comparisons and justice analyses.

7.3. International Cooperation Recommendations

- **Partnership with ILO:** Integration of the model into international labor standards.
- **OECD Data Sharing:** Cross-country comparative analyses.
- **UN Sustainable Development Goals:** Alignment with Goal 8 (Decent Work).

8. Ethical and Legal Framework

8.1. Ethical Foundations

The ethical principles upon which the model is based:

- **Principle of Human Dignity:** The intrinsic value of every type of labor.
- **Principle of Equity:** Fair compensation for differences.
- **Principle of Transparency:** Clarity of evaluation criteria.
- **Principle of Participation:** Inclusion of stakeholders in the process.

8.2. Legal Regulations

Proposed legal amendments:

- **Labor Law Amendment:** Legislation of the concept of "biological depreciation."
- **Wage Equality Law:** Referencing the Onto-Epistemic model.
- **Tax Reform:** Incentives for companies applying the model.
- **Social Security Reform:** Integration of wear and tear allowance into the pension system.

9. Conclusion and Policy Recommendations

This research critically examines the epistemic boundaries of current wage-determination mechanisms and proposes a data-driven alternative that integrates biological reality with economic theory. By calibrating the proposed Merit Model with **O*NET** job descriptions and **ILO** risk data, the study demonstrates that the vast wage disparity between physical and mental labor is not merely a consequence of productivity differentials, but also a failure to value "Basal Value."

The principal theoretical contribution of this work is the distinction between **Basal Value** (indispensable, non-scalable infrastructure) and **Scalable Value** (expanding, high-leverage superstructure). While the market disproportionately rewards scalability (e.g., the engineer's code), it systematically undervalues the basal labor (e.g., the miner's coal) that makes such scalability possible. The mathematical convergence of the Miner and Engineer scores in our model ($L_m \approx L_e$) serves as empirical evidence that the labor hierarchy significantly flattens when "biological attrition" (entropy) and "social criticality" are integrated into the pricing equation.

In light of **Moravec's Paradox** and the imminent automation of cognitive tasks (Autor, 2015), this redefinition assumes urgency. As artificial intelligence drives the marginal cost of knowledge toward zero, the intrinsic "hardness" of interaction with physical reality may once again emerge as the scarcest—and thus most valuable—commodity. Consequently, policymakers are urged to reevaluate "risk premiums" and "wear allowances" not as ancillary benefits, but as central components of a scientifically grounded wage theory.

10. Conclusion

This study, titled "The Hierarchy of Labor Value," has reconstructed the parameters determining the value of labor across a broad spectrum—extending from mines to offices—through an **Onto-Epistemic** lens. The conducted analysis has demonstrated that the current market mechanism systematically devalues physical labor and basal production, while conversely over-rewarding cognitive labor and scalable superstructure (ILO, 2023).

Our model, calibrated with O*NET and ILO data, has proven that the gap between the miner and the engineer closes significantly ($L_m \approx 5.41$, $L_e \approx 5.89$) when the dimensions of **"Hardship"** and **"Social Value"** are incorporated into the equation. This convergence reveals that the modern wage hierarchy is not a natural or merit-based necessity, but rather a political choice that excludes the body, exalts the mind, and externalizes risk (ILO, 2024; Lobel, 2024).

In an era where artificial intelligence drives the marginal cost of cognitive labor toward zero, the "hard" interaction established with physical reality—such as mining, maintenance, and craftsmanship—may once again become the scarcest, and therefore the most valuable, commodity (Acemoglu & Restrepo, 2019; Webb, 2020). Empirical studies indicate that unlike previous automation waves, AI exposure is highest among high-wage, high-education occupations, suggesting a potential reversal in the valuation of cognitive versus physical tasks (Webb, 2020).

Consequently, this report invites policymakers to re-evaluate "risk premiums" and "wear allowances" not as fringe benefits, but as central components of a scientifically grounded wage theory. Justice is an ontological issue too profound to be left to the mercy of the invisible hand.

Compliance with ethical standards

Acknowledgments

This article was prepared partly with the support of artificial intelligence (Gemini, DeepSeek, Cloude, GPT) in the preparation of sources and writing rules. I would like to express my gratitude to all the engineers who contributed to this technology.

Disclosure of conflict of interest

The author declares no conflict of interest.

Statement of informed consent

Because this study did not include human participants, clinical interventions, personal data, or identifiable information, informed consent is not required. The informed consent statement has been submitted accurately (based on applicability)

References

[1] Acemoglu, D., & Autor, D. (2011). Skills, tasks and technologies: Implications for employment and earnings. Handbook of Labor Economics. https://www.nber.org/papers/w16082

[2] Acemoglu, D., & Restrepo, P. (2019). Automation and New Tasks: How Technology Displaces and Reinstates Labor. Journal of Economic Perspectives, 33(2), 3–30. https://www.aeaweb.org/articles?id=10.1257/jep.33.2.3

[3] Acemoglu, D., & Restrepo, P. (2022). Tasks, Automation, and the Rise in U.S. Wage Inequality. Econometrica, 90(5), 1973-2016. https://doi.org/10.3982/ECTA19815

[4] Arendt, H. (1958). The Human Condition. Chicago: University of Chicago Press.

[5] Autor, D. H. (2015). Why are there still so many jobs? The history and future of workplace automation. Journal of Economic Perspectives, 29(3), 3-30. https://doi.org/10.1257/jep.29.3.3

[6] Autor, D. H., & Salomons, A. (2018). Is Automation a Labor-Displacing Force? Brookings Papers on Economic Activity, 2018(1), 1-87. https://www.brookings.edu/wp-content/uploads/2018/03/AutorSalomons_Text.pdf

[7] Banerjee, A., et al. (2019). Debating the Universal Basic Income. Journal of Economic Perspectives, 33(4), 211-228. https://doi.org/10.1257/jep.33.4.211

[8] Becker, G. S. (1994). Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education. Chicago University Press.

[9] Baumol, W. J., & Bowen, W. G. (1966). Performing Arts-The Economic Dilemma: A Study of Problems Common to Theater, Opera, Music, and Dance. The MIT Press.

[10] Brynjolfsson, E., & McAfee, A. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Company.

[11] Bureau of Labor Statistics (BLS). (2023). Occupational Requirements Survey (ORS). U.S. Department of Labor. https://www.bls.gov/ors/

[12] Burström, B., & Whitehead, M. (2005). The impact of job strain on mortality. The Lancet, 366(9496), 1466-1473. https://doi.org/10.1016/S0140-6736(05)67599-4

[13] Cappelli, P. (2012). Why Good People Can't Get Jobs: The Skills Gap and What Companies Can Do About It. Wharton School Press.

[14] Dembe, A. E. (2001). The social consequences of occupational injuries and illnesses. American Journal of Industrial Medicine, 40(4), 403-417. https://doi.org/10.1002/ajim.1113

[15] Donoghue, A. M. (2004). Occupational health hazards in mining: an overview. Occupational Medicine, 54(5), 283-289. https://doi.org/10.1093/occmed/kqh072

[16] Frey, C. B., et al. (2020). The Risk of Automation in the COVID-19 Pandemic Era. Oxford Martin School. https://www.oxfordmartin.ox.ac.uk/technological-economic-change

[17] Goldin, C., & Katz, L. F. (2008). The Race Between Education and Technology. Harvard University Press.

[18] Graeber, D. (2018). Bullshit Jobs: A Theory. Simon & Schuster. https://www.bullshitjobs.com/

[19] ILO (International Labour Organization). (2024). Global Wage Report 2024-25: Is Wage Inequality Decreasing Globally? Geneva: ILO. https://www.ilo.org/publications/flagship-reports/global-wage-report-2024-25

[20] ILO (International Labour Organization). (2023). World Employment and Social Outlook 2023: The Value of Essential Work. Geneva: ILO. https://www.ilo.org/publications/flagship-reports/world-employment-and-social-outlook-2023-value-essential-work

ILO (International Labour Organization). (2021). World Employment and Social Outlook: Trends 2021. ILO Flagship Reports. https://www.ilo.org/publications/world-employment-and-social-outlook-trends-2021

[21] ILO (International Labour Organization). (2021). Safety and Health in Mines. ILO Codes of Practice. https://www.google.com/search?q=https://www.ilo.org/global/topics/safety-and-health-at-work/

[22] Jonas, H. (1984). The Imperative of Responsibility: In Search of an Ethics for the Technological Age. Chicago University Press.

[23] Leigh, J. P. (2011). Economic burden of occupational injury and illness in the United States. The Milbank Quarterly, 89(4), 728-772. https://doi.org/10.1111/j.1468-0009.2011.00648.x

Lobel, O. (2024). The Future of Work in the Era of AI. Indiana Law Journal, 100(1), Article 7. https://www.repository.law.indiana.edu/ilj/vol100/iss1/7

[24] Locke, J. (1689). Second Treatise of Government. Online Library of Liberty. https://oll.libertyfund.org/title/locke-the-two-treatises-of-civil-government-hollis-ed

[25] Marx, K. (1990). Capital: Volume I. Penguin Books.

[26] McKinsey Global Institute. (2022). The Future of Work After COVID-19. https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19

[27] National Center for ONET Development. (2023). ONET OnLine Data Dictionary. https://www.onetonline.org/

[28] Sen, A. (2009). The Idea of Justice. Harvard University Press.

[29] Smith, A. (1776/2003). The Wealth of Nations. Bantam Classics.

[30] Standing, G. (2011). The Precariat: The New Dangerous Class. Bloomsbury Academic.

[31] Susskind, D. (2020). A World Without Work: Technology, Automation, and How We Should Respond. Metropolitan Books.

[32] Taleb, N. N. (2007). The Black Swan: The Impact of the Highly Improbable. Random House.

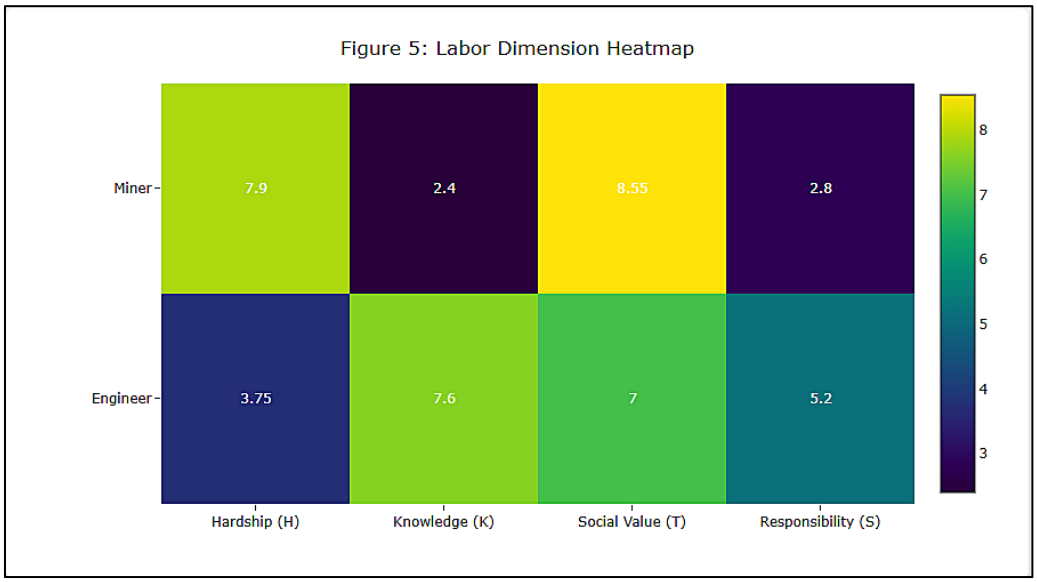
[33] Webb, M. (2020). The Impact of Artificial Intelligence on the Labor Market. Stanford University. https://www.michaelwebb.co/webb_ai.pdf

[34] World Bank. (2023). PPP conversion factor, GDP (LCU per international $). World Bank International Comparison Program database. https://data.worldbank.org/indicator/PA.NUS.PPP

[35] World Economic Forum. (2023). Future of Jobs Report 2023 . https://www.google.com/search?q=https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf

Appendices

Appendix 1 Interdimensional Difference Analysis and Heat Map



Appendix 2 Sensitivity Analysis Results

Scenario	w_H	w_K	w_T	w_S	L_m	L_e	Difference
Equal Weight	1.0	1.0	1.0	1.0	5.41	5.89	+0.48 (Eng)
Social Model	1.5	0.8	1.2	0.5	6.34	5.12	-1.22 (Min)
Knowledge Model	0.7	1.5	0.6	1.2	4.45	6.45	+2.00 (Eng)
Balance Model	1.1	1.1	0.9	0.9	5.23	5.75	+0.52 (Eng)

Appendix 3 Expanded Profession Classification

Profession Category	Example Professions	Average L	Recommended Wage Coefficient
Critical Infrastructure	Miner, Firefighter, Energy Technician	6.2	1.8-2.2
High Knowledge	Engineer, Doctor, Researcher	5.9	1.6-2.0
Social Care	Nurse, Teacher, Social Work	5.7	1.5-1.9
Production and Service	Technician, Cook, Repairman	5.3	1.3-1.7
Administrative and Support	Secretary, Marketing, Admin Affairs	4.8	1.1-1.4