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How is Value Measured? Marx's Question That the Guardians of Orthodoxy Evade

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A Warning to Those Who Cannot Endure

This article was not written to please the reader, nor to offer a reassuring pat on the shoulder, confirming that everything they have learned is correct. It does not aim to provide a mindless slogan to be brandished triumphantly in sectarian disputes among comrades. On the contrary, this text has been deliberately crafted to unsettle stable convictions—specifically those that lead a tranquil intellectual life thanks to mere repetition rather than true understanding.

The question upon which this article pivots is exceedingly simple: How is value measured? It is precisely this simplicity that is the source of the provocation. It does not require interpretive genius, profound encyclopedic readings, or extraordinary hermeneutic effort. It requires one thing and one thing only: a measure.

Here, precisely, is where the problem begins. A reader raised on manuals of generalization and trained in ready-made responses will hasten to say: "Value is a social form, not a physical property." Yet, this is a truncated and

decontextualized response, born of unconscious repetition. It is the response of one who has not read Marx, but has read those who wrote—without any restraint—about Marx. Because answering the question of "How is value measured?" necessitates, first, acknowledging that Marx, and the entirety of political economy, was in error. Secondly, it requires an intellectual effort to uncover the correct scientific measure. However, it has become the custom among the dominant trends in the Left to substitute all of this with a ready-made philosophical complacency—invoking "the social process" at one turn and "historical form" at another, and "what takes place behind the producers' backs" at yet another.

What is even more egregious is when Marx is summoned from his rest to say what he never actually said. The gravest matter of all is to be told—without direct reading of Marx himself—that he wrote: "Value is not measurable."

There is a vast difference between Marx stating: "The objectivity of the value of commodities is characterized by the fact that not a single atom of natural matter is contained within it" (a text inaccurately translated into Arabic as: "Value is not a physical property of the commodity") and between what he never said: "Value is not subject to measurement."

This article is not hostile toward Marx; nor does it treat him, at the same time, as the final horizon of human thought. Rather, it treats him as a thinker who said great things, but also—like any other—said things that are open to criticism, perhaps ordinary, or even trivial. Whoever perceives this as a violation of the sacred is right, and they should not follow me! And whoever is accustomed to regarding inquiry as confusion, criticism as an insult, and the measurement of value as a conspiracy, is entirely free to stop here; for they will find nothing in this text to reassure or console them.

Fundamentals That Require No Interpretation

Marx wrote, verbatim, with clarity and precision: *"How, then, is the magnitude of this value to be measured? By means of the quantity of the value-creating labour it contains... Quantity of labour itself is measured by its duration, and working-time is itself measured by particular periods of time, as the hour, the day, etc."* (Marx, **Capital**, Volume I, Chapter I).

"Wie wird nun die Größe des Werts gemessen? Durch das Quantum der wertbildenden Arbeit. Die Quantität der Arbeit selbst mißt sich durch ihre Dauer, die Arbeitszeit, und die Arbeitszeit wiederum hat ihren Maßstab an bestimmten Zeitschnitten, wie Stunde, Tag usw." Marx, **Das Kapital: Kritik politischen Ökonomie**. Band I: Der Produktionsprozeß des Kapitals. Buch I: Die Ware und ihr Wert. Berlin: Dietz Verlag, 1962 [MEW Band 23].

Marx himself, then, asks: How shall we (measure) value? There is no ambiguity in this question. He then provides, as seen in the text above, an answer that is equally clear and unambiguous. Accordingly, when political economy—not just Marx—states that the value of a pen is 30 minutes, it means that the socially necessary human effort embodied in the pen has a value of 30 minutes. However, this doctrine of measuring value, and its consequences, clash with the principles of the science of measurement (Metrology); in fact, it contradicts the very concept of value itself. For it is scientifically incorrect to say that the human effort expended to produce a thing equals (x) minutes or (y) hours—even if it is permissible to say that the human effort expended to produce a thing was carried out during (x) or (y) minutes or hours.

Even when we assert that human effort was expended during (x) minutes or carried out during (y) hours, this by no means implies that we have measured this human effort. On the contrary, it simply means we have identified the duration (within which) this effort was spent, without determining the magnitude of the effort itself. We have identified the time during which value was formed, but without knowing the magnitude of the value itself!

Within the framework of our current fundamental premise (which requires neither interpretation nor genius), we must pose the following question: What is the most essential characteristic of a measure? The direct and obvious answer is: constancy. That is, the measure—and consequently the unit of measurement—must be constant to perform its function; for value cannot be measured by a measure that is itself variable.

The quantity of labor (measured in hours) is, in fact, a definitive example of such a variable measure that cannot be relied upon to measure value. This is because types of labor differ from one another in terms of both hardship and skill. The nature of a security guard's work differs from that of a mason in terms of hardship; hence, an hour of a security guard's labor differs from an hour of a mason. Similarly, the nature of a barber's work differs from that of a surgeon's in terms of skill; thus, an hour of a barber's labor is not equivalent to an hour of a surgeon.

In reality, this problem did indeed confront political economy. Adam Smith, after admitting that: *"It is not easy to find any accurate measure either of hardship or ingenuity. In exchanging indeed the different productions of different sorts of labor for one another, some allowance is commonly made, both,"* was forced to concede that: *"It is adjusted, however, not by any accurate measure, but by the higgling and bargaining of the market, according to that sort of rough equality which, though not exact, is sufficient for carrying on the business of common life."* (**The Wealth of Nations**, Book I, Chapter V).

Ricardo follows, as usual, in Smith's footsteps, agreeing with the principle of the market's ability to equalize different types of labor, stating: *"The estimation of different qualities of labor is soon adjusted in the market with sufficient precision for all practical purposes, and it is much more dependent on the comparative skill of the labourer, and intensity of labor performed, than on the actual time expended in it."* (**Principles**, Chapter I).

As for Marx, who ignored the existence of a real crisis in the theory of value resulting from the variation of labor in intensity and skill, instead of re-examining the measure of value and its unit of measurement, he also asserted that: *"The different proportions in which different sorts of labor are reduced to unskilled labor as their standard, are established by a social process that goes on behind the backs of the producers, and, consequently, appear to be fixed by custom."* (**Capital**, Book I, Chapter I).

"Die verschiedenen Proportionen, worin verschiedene Arbeitsarten auf einfache Arbeit als Maßeinheit reduziert werden, werden durch einen gesellschaftlichen Prozeß bestimmt, der sich hinter dem Rücken der Produzenten vollzieht" (Marx, **Das Kapital**, Band I, Kapitel I)

When Marx asserts, in this manner, that: *"The different proportions in which different sorts of labor are reduced to unskilled labor as their standard, established by a social process that goes on behind the backs of the producers,"* he is not evading measurement; rather, he affirms it twice over: once when speaking of "proportions," and again when declaring the existence of a unit of measurement (Maßeinheit).

Yet, this very text is presented to us as a pretext to claim that "value is not measurable"! What a complete subversion of meaning! The reference to a "social process" does not negate measurement; instead, it merely shifts the determination of these proportions from the realm of theory to the market—that is, the movement of prices and actual exchanges.

And here, the collapse begins. What is presented as a solution to the problem of measuring labor culminates in a fatal confusion between value and market price, and between the unit of measurement and its volatile standard. Either value is measurable by a specific unit, or it ceases to be a law altogether. To claim that it is measured "socially" according to proportions that fluctuate day by day, while insisting that we remain within the bounds of an objective law, is not science; it is a cheap ideological reassurance.

Thus, the phrase "a social process that goes on behind the backs of the producers" serves as an incredibly convenient solution. It allows us to retain a unit of measurement called "simple labor" without—unfortunately—ever having to use it! The proportions exist, yet no one knows them! The unit exists, yet no one can fix it! The measurement is ongoing, yet questioning it is forbidden! Everything is measured, provided we do not ask: With what? How? And why do the result tomorrow differ from what it was today?

Thus, instead of the market serving as a testing ground for the Law of Value, the Law becomes a pretext to justify market fluctuations. We are then asked, ultimately, to be reassured: what occurs is scientific, objective, and historically necessary, simply because it happens "behind our backs"! What an elegant way to transform theoretical impotence into social destiny, and to turn measurement into a priestly secret of the temple, guarded against all inquiry!

Marx, by referring us to what happens "behind our backs," is essentially referring us to the market—exactly as Smith and Ricardo did, no more and no less. In the market, according to its shifting laws, we will observe today an hour of a mason's labor being exchanged for a quarter-hour of a surgeon's, and nine hours of a barber's labor exchanged for one hour of a lawyer's. Tomorrow, we shall see the hour of the mason's labor exchanged for half an hour of the surgeon's, and four hours of the barber's labor for half an hour of the lawyer's. Thus, values shift and prices fluctuate.

In this manner, we gradually drift away from the Law of Value, embarking on a long march of confusion: between value and market price; between market value and exchange value; between exchange value and market price; and indeed, between value and the price of production, and between the price of production and market price.

The Genesis of Confusion: Reading About Marx vs. Reading Marx

We have stated, and we reiterate: Marx asks, verbatim and with clarity, in the first chapter of the first volume of Capital: *"How is the magnitude of this value to be measured?"* We have also stated, and we reiterate again: he answered this question by saying: *"...By means of the quantity of the value-creating labor it contains... Quantity of labor itself is measured by its duration, and working-time is itself measured by particular periods of time, such as the hour, the day, etc."*

Yet, this is precisely where all the confusion and conflation begin. We know that Marx also stated: *"The objectivity of the value of commodities is characterized by the fact that not a single atom of natural matter is contained within it."* This text has been translated, as we noted, inaccurately into the famous phrase: *"Value is not a physical property of the commodity."*

"Die Wertgegenständlichkeit der Waren unterscheidet sich dadurch, daß man ihr kein Atom Naturstoff ansieht." (Marx, **Das Kapital**, Band I, Kapitel I)

Marx never said that *"value is not subject to measurement."* The distinction here is fundamental. Marx always distinguishes value—which is not a perceptible material thing (it cannot be seen, touched, or weighed)—yet remains, nevertheless, measurable. It is not a physical measurement, but a social one. In this sense, it is measured for him—as it was for William Petty, Cantillon, Smith, and Ricardo—by socially necessary labor time. This is a measurement, but it is not of the same nature as measuring length, weight, or temperature.

When Marx says: *"In the value of the commodity, not a single atom of natural matter is seen,"* he is not announcing the death of measurement. Quite the opposite: he is merely declaring that value is not wood, nor iron, nor atomic weight. However, the "School of Intellectual Reassurance" received this sentence as if it were an eternal license to evade; as long as there is no "natural atom," do not ask about the measure! Thus, the negation of physics was transformed into a negation of arithmetic, and the phrase *kein Atom Naturstoff* became an incantation used to forbid inquiry.

The stark paradox lies in the fact that Marx, in almost the very next sentence, perceives nothing in value except: "certain masses of congealed labor-time" *"Als Werte sind die Waren nur bestimmte Massen geronnener Arbeitszeit."* (Marx, **Das Kapital**, Band I, Kapitel I, MEW 23, S. 62)

That which possesses no natural atom possesses—miraculously—a magnitude. It seems that magnitude is acceptable as long as it is not measured! Time is permitted as long as it is without a clock! Measurement is legitimate only on the condition that it has no unit!

Thus, we arrive at the highest achievement of "Comfortable Marxist Thought": Value without matter! Time without a standard! And a law without a measure! We are then asked, in all seriousness, to call this a "science." The important thing to note is that those who ask this of us have not read Marx; they have received all their concepts from those who wrote, according to their own whims, about Marx!

Where, Then, Does This Nonsense Originate?

In Capital (Volume I, Chapter I), Marx states in very clear terms: *"Labour-power is the material [Stoff] out of which value is built."* This has also been translated into Arabic, with a lack of precision, as: "Labour is the substance of value."

"Die Arbeitskraft ist der Stoff, aus dem der Wert gebildet wird." (Marx, **Das Kapital**, Band I, Kapitel I, MEW 23, S. 62)

Marx also stated: "The magnitude of value is measured by the quantity of labor, that is, by labor-time." He further emphasizes that value contains "not a single atom of matter," yet it is determined and measured socially. Where, then, did this nonsense about "non-measurable value" come from? And from where did the phrase "Value is not subject to measurement" emerge?

The scientific truth is that this phrase is not Marxian at all; it never originated from Marx, it is not scientific, and it has no connection to political economy. Rather, it is a later interpretation or a loose philosophical expression used to evade specific criticism—which we shall see shortly—by sliding from a correct statement (albeit via a common translation): "Value is not a physical property," to a non-Marxist, unscientific claim: "Value is not measurable in the first place."

Why was it said, then, and allowed to seep into the minds of those who have not read Marx, only to be repeated unconsciously? It was said because Marx's theory of value—indeed, the theory of value in political economy throughout its history—suffers from a fundamental problem that led to:

- The inability to compare different and disparate types of labor. (A problem Ricardo, and Smith before him, faced and explicitly admitted, whereas Marx ignored it). Consequently, value appeared as an impotent theory, and Marxists had to remedy this quickly, even at the expense of corrupt interpretation.
- The inability to determine value in the service sector. This confirmed the inadequacy and deficiency of the theory of value. Here too, Marxists must obfuscate the problem, even if it requires jargon and hollow, meaningless talk, memorized through ignorance and imposed upon victims via intellectual terrorism. The priority is to save the idol from drowning.

An Escape from Facing the Truth

With these problems in the theory of value—deficient as it is—value ceases to meet the criteria of an objective law, and perhaps the entirety of the "sacred book, Capital, built upon the law of value, collapses. What is the solution? The scientific solution is to admit Marx's error—indeed, the error of political economy as a whole—as a scientific starting point to search for the correct measure of value. However, ideology does not favor science. Therefore, the Marxists—the guardians of orthodoxy—evade the answer by claiming that value is not measurable, starting from their conflation of Marx's scientifically sound statement: "Value is not a physical property of the commodity," and what Marx never wrote: "Value is not subject to measurement."

They could have listened to Ricardo—a seeker of truth, not falsehood—when he admitted the existence of a problem in measuring value and declared his belief that science would inevitably one day reveal the correct measure.

But our friends fear apostasy against the "Sent Prophet" who "does not speak out of whim," despite the truth being as clear as the sun in its zenith: Value is not a quantity of labor (unseen, yes; intangible, yes), but the quantity of labor is not measured by the hour. What the hour measures is time, and value is not what it is expended, as human effort, during time. Consequently, the clock tells us that the effort (which is value) was expended during a certain number of hours, but it never tells us the magnitude of that effort (which is value). Starting from these facts, it was possible to move forward to uncover the scientifically sound unit of measurement, in order to re-present value as a self-standing objective law, without needing to beg for guidance from the market, as did Marx, who stated clearly: *"The different proportions in which different sorts of labor are reduced to unskilled labor as their standard, are established by a social process that goes on behind the backs of the producers."*

Economics through Poetry and Idle Chatter

Before we present the scientifically correct measure of value, we must ask—and this inquiry is not merely a theoretical exercise, but a fundamental issue of understanding political economy itself: How do we know that the capitalist exploits the worker, whether a miner or a university professor? Shall we content ourselves to drown in economic poeticism, discussing general ethics and sipping "ready-made philosophy" from cafe cups? Or do we need a tangible, numerical, and defined measurement of the surplus quantity he obtains? Are not all models of social reproduction, and all calculations of the price of production, fundamentally based on socially measurable values?

He who treats exploitation as a fluid, non-measurable moral concept is no different from one who claims that gravity is a cultural opinion, or that electricity is an emotional state. This is not a fleeting misunderstanding; it is an evasion of reality. Exploitation is not an impression; it is a calculable ratio between paid and unpaid labor. He who rejects measurement does not protect science; he empties it of its content. Even so-called "unequal exchange" remains mere rhetoric unless translated into specific quantities: How many hours of labor were extracted? How much value was transferred? Without numbers, and without measurement, there is no theory—only linguistic noise, empty social poeticism, or academic nonsense armed with grand but pale and meaningless terms.

In short, if we do not possess a specific tool of measurement, a constant unit of measurement, and a precise method of calculation, economic theories will remain mere stories told by people who possess a high emotional sense of injustice, yet are incapable of the actual monitoring of surplus value. Value, as Marx himself says, is a quantity of human effort embodied in the product; it can be measured, its surplus can be calculated, and who appropriates what can be determined—all with clear numbers, without hollow philosophy, without mysterious social processes, and without a single atom of the matter intended to mislead us.

The Missing Measure: How Do We Restore Value to the Realm of Science?

Starting from an awareness of the fundamental and decisive distinction between what Marx said—"How shall we measure value?" and "Value is not a physical property"—and what he never said—"Value is not measurable"—I have demonstrated in the first volume of my book, *A Critique of Political Economy*, that political economy measures value using a scientifically unsound standard.

Value, as a quantity of labor embodied in a product, cannot be measured by the hour, because the hour measures time. Consequently, I have arrived at a scientifically correct measure without abandoning science for the market: Value is measured by the Necessary Calorie (Living, Stored, and Surplus, divided by production time) expended in the production of a commodity. Since the 1930s, we have known with certainty the amount of necessary calories expended during production across various occupations (see, for example, the studies conducted and published by the World Health Organization in 1974). This measurement not only spares us from resorting to the market, trial-and-error, and the abandonment of objective law, but also enables us to measure, with precision, disparate and varied types of labor. Furthermore, it allows us to go further and measure the service sector, which political economy has neglected due to its lack of a proper measure. It also allows us to re-examine many theories presented as axioms—such as "Unequal Exchange"—which were misled by the faulty measure, considering the exchange between the rich North and the poor South as unequal based on unsound standards.

Dispelling Remaining Illusions

By establishing that the measure of value is the Necessary Calorie, we can: first, compare labours that differ in intensity and skill; second, determine the value of labor in the service sector; and third, restore the status of the Law of Value as an objective law that does not need the market to guide us toward exchange values. Science has provided us with facts regarding the necessary calories expended by the mason, the architect, the farmer, the miner, the teacher, and the club dancer (W.H.O., 1974).

We must remove one final illusion. It might be said—and indeed has been—that the ultimate proof of my error is that my argument implies a mason's labor is of greater value than an architect's, because the mason exerts more necessary energy. This illusion vanishes if one reads what I wrote verbatim in *A Critique of Political Economy*: "Thus, it is understandable why an architect's wage exceeds that of a blacksmith, even though the blacksmith consumes 2 necessary calories while the architect consumes only 1,100. The wage does not only include the quantity of socially necessary calories for the worker to function and live as a worker; it also includes the quantity of necessary calories expended to transform the architect into an architect and the blacksmith into a blacksmith. That is, the capitalist class ensures, through the wage it pays, that the worker reproduces his like, thereby guaranteeing its own social survival by ensuring the existence of the working class." (Zaky, *A Critique of Political Economy*, Vol. 1).

In Closing

The problem of those who reject my contribution does not lie in a dispute over terminology, history, or interpretation. It lies in the rejection of careful, objective, and critical reading—a rejection rooted in the claim of possessing the absolute truth and the refusal to touch "Marx the Idol" rather than "Marx the Thinker" who, like others, errs and excels. It is a fear of the shattering of the icon. It stems from the belief that Marx is the Alpha and the Omega, even though no understanding of Marx can be correct without a profound grasp of the entire theoretical body of political economy built by Quesnay, Petty, Cantillon, Smith, Ricardo, and Ramsay. Without this, Marx remains on the lips, but not in the blood.

Finally, I am certain that this article will be criticized without even being read! I thank, from the depths of my heart and mind, those who have read it despite its length. To those who have not, I reply in advance with the words of Marx himself: "*Every opinion based on scientific criticism I welcome. As to the prejudices of so-called public opinion, to which I have never made concessions.*" (Karl Marx, Preface to the First Edition of Capital, London, 25 July 1867)

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2. For an analysis of the role of time in the formation of value, see our article:

"Value / Time: An Essay on the Principles of Political Economy." *African Journal of Economic Review*, Vol. 13, No. 2 (June 2025).

3. For a comprehensive overview of our approach to the critique of political economy, see our book:

Critique of Political Economy (Cairo: Hindawi Foundation, 2021).

4. For scientific discussions on measuring human effort in terms of calories, see:

Marion Bennion, ***Introductory Foods***, 7th ed. (New York: Macmillan Publishing Co., 1974), 123 ff.

Allan Camron and Yvonne Collymore, ***The Science of Food and Cooking*** (London: Edward Arnold, 1979), 6543–7654.

Robert Weber, ***Heat and Temperature Measurement*** (New York: Prentice-Hall, 1950), chap. 10, "Calorimetry," 171–189.

D. Fenna, ***Elsevier's Encyclopedic Dictionary of Measures*** (Amsterdam: Elsevier Science B.V., 1998), 72.

Handbook on Human Nutritional Requirements (Geneva: W.H.O., 1974).

Temperature: Its Measurement and Control in Science and Industry, Papers presented at the Symposium held in New York City, November 1939, under the auspices of the American Institute of Physics (New York: Reinhold Publishing Corporation, 1941), chap. 6, "Temperature and its Regulation in Man," 525–575.

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